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## GENERAL STUDIES (TEST CODE : 1834)

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|---|---|---|---|
| Name of Candidate | KASTURI PANDA | | |
| Medium Eng./Hindi | ENGLISH | Registration Number | 721089 |
| Center | ONLINE | Date | 28-08 |

### INDEX TABLE

| Q. No. | Maximum Marks | Marks Obtained |
|---|---|---|
| 1 | 10 | |
| 2 | 10 | |
| 3 | 10 | |
| 4 | 10 | |
| 5 | 10 | |
| 6 | 10 | |
| 7 | 10 | |
| 8 | 10 | |
| 9 | 10 | |
| 10 | 10 | |
| 11 | 15 | |
| 12 | 15 | |
| 13 | 15 | |
| 14 | 15 | |
| 15 | 15 | |
| 16 | 15 | |
| 17 | 15 | |
| 18 | 15 | |
| 19 | 15 | |
| 20 | 15 | |

**Total Marks Obtained:**

**Remarks:**

### INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
   उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न–पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI**
   इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
   सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
   प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other that the authorized one.
   प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न–सह–उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
   प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
   उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

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# EVALUATION INDICATORS

1. **Contextual Competence**
2. **Content Competence**
3. **Language Competence**
4. **Introduction Competence**
5. **Structure - Presentation Competence**
6. **Conclusion Competence**

**Overall Macro Comments / feedback / suggestions on Answer Booklet:**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**All the Best**

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(इस भाग में कुछ ना लिखें)

1. The Sunga dynasty contributed significantly to the cultural and social development in ancient India. Discuss. **(150 words) 10**
प्राचीन भारत में सांस्कृतिक और सामाजिक विकास में शुंग वंश का महत्वपूर्ण योगदान रहा है। चर्चा कीजिए।

The Sunga dynasty were a pre-dominantly Brahmanical royal system that rose to prominence in central India after the fall of Maurya Dynasty.

Contribution to cultural development

① More patronage to Hinduism
- attempted to reduce the hand of Buddhism in India

② Building of temples - architectures and places of worship.

③ Rural and urban development
- patronage to artisans, guilds, food production.

④ Rise in textiles, ornaments and shrenis - inter culture interaction with other dynasties like Kanvas,

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southern empires like Cholas.

**Social Development in Shunga Rule**

1. Extensive empire building activity
   - capturing other empires - war.
2. multiple marital alliances
3. Greatest king - Pushyamitra Sunga
4. Rights and leadership on maternal side
5. Grants to Temples, Brahmins & priestly class - Brahmadeya, Agrahara.

The rich legacy carried on from Shung dynasty made Indian culture divinely with later architectural marvels and artisanal vibrance.

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2. Discuss the role of foreign nationals in the Indian freedom struggle during the Gandhian phase. **(150 words) 10**
भारतीय स्वतंत्रता संघर्ष के गांधीवादी चरण के दौरान विदेशी नागरिकों की भूमिका की विवेचना कीजिए।

The contribution of foreign nationals was an impactful stance during Gandhian phase of an inclusive and dynamic freedom struggle.

Direct involvement in Freedom Struggle by foreign nationals

① Annie Besant - setting up Home Rule league on Irish lines - later became satyagraha Sabha.

② G Yule, William Wedderburn - presided INC meetings

③ Multi ethnic leadership system - George Arundale

④ AO Hume - architect of Indian National Congress

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Indirect Contribution

① Tolstoy - Gandhi had set up Ashram system in India based on Tolstoy Farms in India.

② Influence of foreign music and theatre - gave inspiration for Swadeshi.

③ Verrier Elwin - tribal rights.

④ Wives of foreign nationals and British - who sympathised with Indians - did constructive work - promotion of sports.

⑤ Morley-Minto-Montague-Chemsford - instilled reactionary influences

→ Despite their alien origin, foreign nationals immensely contributed to Indian attainment of freedom in 1947.

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3. Provide an account of the contributions of Ram Manohar Lohia during the Indian freedom struggle and in post-independence India. **(150 words) 10**
भारतीय स्वतंत्रता संघर्ष के दौरान एवं स्वातंत्र्योत्तर भारत में राम मनोहर लोहिया के योगदान का विवरण प्रस्तुत कीजिए।

Ram Manohar Lohia played a pioneering role as a radical leader who instilled strong nationalism for creation of independent as well as post-independant India.

Contributions to Freedom Struggle

① Demanded the council entry after elections in 1930s

② Reforms advocated - freedom of press, curbing police powers, civil rights, Indianization of leadership.

③ Also constructive work with Gandhi

④ Led the idea of Hindu Responsivists in Swarajya Party.

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(5) He was against divisive tendencies and Islamic communalism - in Jinnah faction

Contributions post-Independant India

(1) Shaping Hindu code Bill - opinions on inheritance, marriage, rights of women

(2) Vocal against partition holocaust

(3) Diplomatic contribution to integration of all princely states - single nation

(4) Excellent parliamentarian and held ministerial portfolios.

In more than multiple ways Ram Manohar Lohia's ideas have shaped creation of New India @75.

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**4.** What do you understand by tsunamigenic zones? Giving an account of their global distribution, explain the propagation of tsunamis. **(150 words) 10**
सुनामी जनक क्षेत्रों से आप क्या समझते हैं? उनके वैश्विक वितरण का विवरण देते हुए, सुनामी के संचरण की व्याख्या कीजिए।

Tsunamigenic zones refers to points in oceans that are prone to tectonic activities leading to tsunami and flooding in land boundaries.

Fig: Tsunamigenic zones across world

**Global Distribution of Tsunamigenic Zones**

(1) Pacific Ring of fire – High tectonic activity – ocean continent

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convergence zone

(2) Middle East North African Zone
- extending to Mediterrean zone - presence of multiple plates.

(3) South America - Across tides region

(4) Philipines and South East Asia, Indian ocean Islands - Madagascar, Seychelles, Mauritius - ocean - ocean convergence zone

(5) Japan subduction region - 3 continent plate meeting area.

Propagation of Tsunamies → Tectonic Distribance of ocean Floor → wave activity in Ocean due to lower wave amplitude → 4th, 8th, 12th waves reach high heights → On reaching coast - plate height reduces → High destruction - multi metre waves

Study of tsunamigenic zones through Disaster Resilience Infrastructures and Disaster Risk Reductions are absolutely essential to combact disaster poverty.

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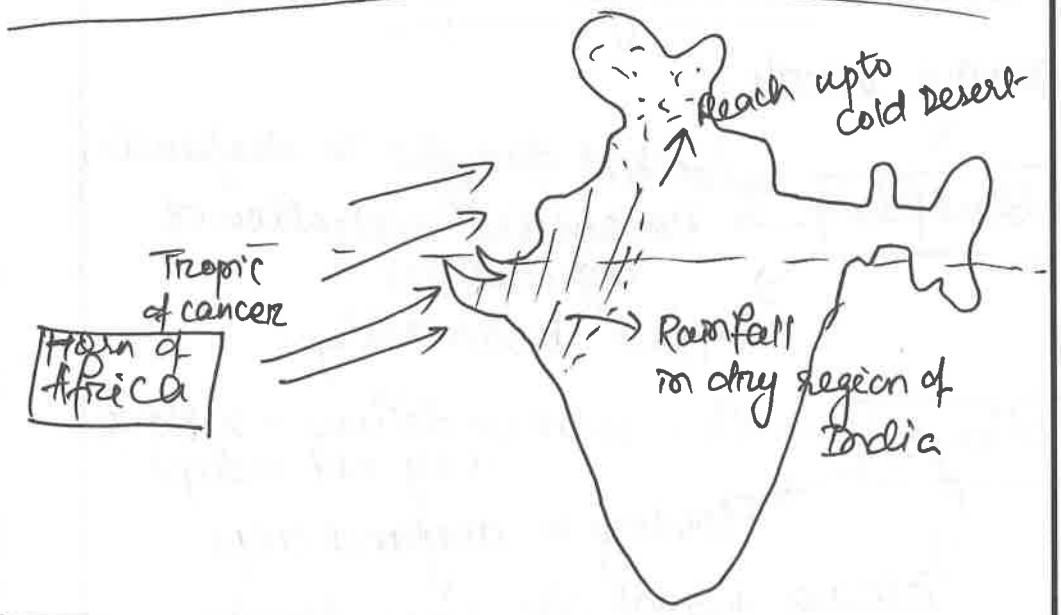
**5.** What are atmospheric lakes? Highlight their characteristics.

**(150 words) 10**

वायुमंडलीय झीलें क्या हैं? उनकी विशेषताओं पर प्रकाश डालिए।

Atmospheric lakes refer to water holding clouds that propagate from Eastern Africa to western India that push rain bearing trade winds through western side of India




Characteristics

1. Travel west to east
2. Cumulonimbus clouds formed in

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Horn of Africa - High Pressure

(3) Create mild low pressure conditions in Thar - Rajasthan-Gujarat region of India - ~~rainfall~~ precipitation in deficient areas.

(4) Influence agriculture in North west

(5) Augment the western Disturbances

(6) Reach the Himalayan region - fast moving winds.

Benefits
- combat drought in drylands
- Atmosphere irrigation of agriculture
- Support biodiversity.

Challenges
- Alter local conditions - Wildlife may not adapt
- Flooding in dryland crops
- Disease travel like Locus Attacks and pests enter India.

Atmospheric Lakes are a nascent weather phenomena whose pros and cons require deep insights to address climate change.

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6. What are polymetallic nodules? Highlight their geographical distribution and state their significance. **(150 words) 10**

पॉलीमेटेलिक नोड्यूल्स (बहुधात्विक ग्रंथियां) क्या हैं? उनके भौगोलिक वितरण पर प्रकाश डालिए और उनका महत्व बताइए।

Polymetallic Nodules (PMN) are the multi-mineral resources found in ocean beds deeper into height. Eg. Manganese-Iron-Potassium-Uranium-Thorium found in amalgamation. / Monazites sands - Kerala.

Fig: Geo distribution of poly metallic Nodules.

Significance of PMN

① Resource potential - for energy

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Shale Gas, coal Bed Methane, Uranium & Thorium

(2) Export and revenue potential Eg. India launched Samudrayan Mission
- Deep sea Indian Ocean Mission
- in territorial waters.

(3) Precious minerals like gold, copper in Alaskan region, Artic zone.

(4) Rare minerals - South & East China Sea
- semiconductor and electronic chips.

(5) Source of nutrients - marine biodiversity thrive.

(6) Aphotic zone - remain relatively less corrosive & less reactive.

PMN hold the key to a trillion dollar dollar economy if India achieves in their optimum excavation, exploration and utilisation.

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7. What are technical textiles? In view of their significance, discuss the steps taken by the government to promote them in India. **(150 words) 10**
तकनीकी वस्त्र क्या होते हैं? उनके महत्व को देखते हुए भारत में उन्हें बढ़ावा देने के लिए सरकार द्वारा उठाए गए कदमों पर चर्चा कीजिए।

Technical Textiles refers to the textile that have industrial purpose and not personal retail value

E.g. Fishing nets, Stone retention in hills, packaging materials, covering corrosive & inflammable substances.

Steps taken by government to promote

1. Setup Textile Parks
2. AFTUS - Technical Upgradation of Textile industry - skilling and capacity Building
3. Credit facility - MUDRA, StandupIndia by MSMEs, women and small industries.

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(4) Insurance under PM Laghu Vyapari Man Dhan Yojana

(5) ESIC and EPFO along with formalisation of economy

(6) Boost textile exports - using retail advantage.

(7) Priority in Procurement - Government e Marketplace, vocal for local

(8) Development commissioner for National Mission on Technical Textiles.

Technical textiles have high potential of women employment and creation of support system of 25% growth target manufacturing economy to achieve demographic dividend.

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8. Discuss the challenges that internal migration creates for urban governance in India. Also, suggest measures to address the same. **(150 words) 10**

भारत में आंतरिक प्रवासन द्वारा शहरी शासन के समक्ष उत्पन्न चुनौतियों की विवेचना कीजिए। साथ ही, इससे निपटने के उपायों का भी सुझाव दीजिए।

As per census 2011, about 37% of Indian population were internal migrants with majority 70% of them women which calls for efficient urban governance.

primary internal migration → Rural to urban → Cause → men → employment; women → marriage.

Challenges

① population pressure in urban areas
- high density - proliferation of slums
- lack of proper housing

② poor living conditions in slums - denial of water, energy, sanitation entitlements

③ unscientific urbanisation - absence of detailed survey and data - difficulties

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in public service delivery like rations. or essentials

(4) increase in urban disasters - heat domes, extensive flooding, water insecurity, power outages and industrial risks.

Measures to address urban challenges due to migration

(1) complete interoperability of ration cards ~~-ONOR~~ - One Nation One Ration card scheme

(2) Drone surveys and household identity numbers - E.g. JAGA Mission Odisha.

(3) Implementing better - PM Awas Yojana, Livelihood Mission and PM Ujwala Yojana 2.0.

(4) Evidence based planning - use of ICT and prediction - managing disasters.

(5) Reclamation of water bodies, urban forestry, Rain water Harvesting structures

urban governance strengthening is a part and parcel of migrant empowerment and precursor to achieve SDG 11

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9. Discuss the various opportunities and challenges posed by globalization on working women in India. **(150 words) 10**

भारत में कामकाजी महिलाओं के लिए वैश्वीकरण द्वारा उत्पन्न विभिन्न अवसरों और चुनौतियों पर चर्चा कीजिए।

The UNDP refers to globalisation as increasing interconnectedness of cultural, social, economic and political systems of nations across the world.

Opportunities of globalisation to working women [G] [WW]

(1) Increased labour force participation rate - jobs from MNCs, flexible work hours, work from home.

(2) Financial independence & inclusion - break shackles of patriarchy.

(3) Social acceptance of women as leaders - voting rights, land rights, reproductive rights such as period leaves.

(4) Adoption of best practices - educational attainment, delayed marriage, lesser children and stress on health -

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- breaking the glass ceiling.

(5) Easier transportation and connectivity - airways, metros - safe public transport to work.

Challenges of G on WW

(1) Incomplete Globalisation of patriarchy - even when both partners work - crucial decisions taken by women — also do double shift unpaid work

(2) Spread of patriarchal perception - As per UN Social Norms Index - 95% world believes women are worse business leaders - Glass Cliff rise

(3) Unsafe public transport - Uber case and workplace sexual offences - (POSH Act)

(4) Educated unemployment, part time roles, gender collarisation in care giving roles

The harnessing of opportunities and curbing challenges to working women in globalising work is essential for SDG No 5.

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**10.** Discuss the rationale behind anti-conversion laws in India. Also, state the concerns that have been raised with regard to these laws.

**(150 words) 10**

भारत में धर्मांतरण विरोधी कानूनों के पीछे निहित तर्कों पर चर्चा कीजिए। साथ ही, इन कानूनों के संबंध में व्यक्त चिंताओं का भी उल्लेख कीजिए।

Anti Conversion laws in different states are adopted to curb the menace of religious conversion by using force, deception or trickery.

Rationale Behind the laws

① Reduce exploitation of women in the name of religion - conversion to minority religions.

② Protect identity of community - demand by religious patrons.

③ Establish communal harmony - tolerant pluralism of all religions.

④ Perpetuating ideological cohesions - negate possibilities of violence, riots, honour killings, mob lynchings etc.

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Concerns raised against them

① Method of vote bank politics
- appeasement to majority religions.

② State suppression of right to choose partner (Art 21) - unethical - clarified by supreme court in Hadiya case.

③ Mysogynistic framework of laws
- men devised to control choice and sexuality of women in the name of protection.

④ can spearhead conflict between religions leading to communalism

⑤ Does not aim at any social reforms
- perpetuates Brahmanical patriarchy
- "Caste in dove Jihad" - lower caste hindu women belong to upper caste Hindus men (Aparna Vaidik)

While anti-conversion laws aim at religious pluralism, Law commission instead has recommended Uniform civil code for upholding secularism.

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**11.** Central Asian contacts had a profound political and cultural impact on India in ancient times. Discuss. **(250 words) 15**

प्राचीन काल में मध्य एशियाई संपर्कों का भारत पर गहरा राजनीतिक और सांस्कृतिक प्रभाव पड़ा है। विवेचना कीजिए।

The Central Asian contacts entered Indian subcontinent through conquests on the North western side - Khyber pass like Alexander and the Huenas.

Political impact on India

① Entry of Greek rules - setup of Indo-Greek dynasties - Kushanas

② System of inheritance and primogeniture

③ Conquests and wars - extended East wards towards Mahajanapadas

④ Inclusion of Brahmins and Buddhist saints in administration E.g. patronage to priests for self-glorification, King Menendas and Nagasena.

⑤ Inspire feudal system of administration

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## Cultural impact in India

① Patronage to all religions
- built monasteries, viharas, chaityas and basadis E.g. Ajanta caves, Stupas.

② Inspired literary traditions - epics, Jataka tales.

③ Rise of secular education - astronomy, mathematics.

④ On medicine and Health - Sushruta and Charaka.

⑤ Rise of Gandhara Art and Mathura Art - influence of Greeks and Romans

⑥ Patronage to traders - shrenis, music and dance.

⑦ Building ports and naval system

~~The central As~~ ⑧ Excellent numismatic - use of golds in coin

The central Asian contacts extremely contributed to rise Indian culture and its recognition ~~as~~ across the world.

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**12.** Governance, during the British rule, was a means of exploitation of India rather than a vehicle of public welfare. Discuss. **(250 words) 15**

ब्रिटिश राज के दौरान शासन (गवर्नेंस), लोक कल्याण के एक माध्यम के बजाय भारत के शोषण का एक साधन था। विवेचना कीजिए।

The British Rule governed India with motives of maximising own revenue, establishing white supremacy and draining wealth rather than being public rulers.

Exploitation by British in India

① Drain of wealth - Dadabhai Naoroji - investing in India but all profits, interests drained to Britain.

② Depesantisation - High tax revenues, zamindari system, growing commercial crops, shackling Indian agriculture.

③ Segregating Tribals - Declaring as criminal Tribes, access and plunder of forest resources, extensive mining and

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deforestration.

(4) Dumping foreign goods - Ban of export of Indian cloth but high import (Calico Act) of manchester textiles and Liverpool salt.

(5) Degradation of artisanal and cottage industries - with no support in policies.

(6) High use of force - curbed freedom of press, oppressive police regime, no practical right to equality.

(7) One way Free Trade policy - all raw materials exported to UK leading to food insecurity and famines.

(8) Divide and Rule Policy.

British denied all instances of public welfare

(1) English education - Meant to produce obedient workforce to take colonial orders - no implementation of vernacular

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and wood's Despatch in essence.

(2) Reduction in age of eligibility for civil services - difficult for Indians to achieve exam.

(3) No attempt to improvise agriculture - absentee landlordism.

(4) Large scale unscientific deurbanisation - pressure on rural lands.

(5) Railways - meant to transport British goods to urban centres - high inequality.

(6) mass unemployment, poverty and repeated famines - during Lord Lytton, Lord curzon and even in 1940s.

(7) Created communalism and Depressed Class strifes.

(8) Carrot & Stick Policy - no real governance reforms

The supressive and self greed oriented British governance return became watershed points of agitations and movements that boosted the Indian Freedom Struggle.

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**13.** Discuss how India successfully dealt with the sensitive issue of language, which had the potential of threatening national unity in the post-independence period. **(250 words) 15**

चर्चा कीजिए कि भारत ने भाषा के संवेदनशील मुद्दे का, जिसमें स्वातंत्र्योत्तर अवधि में राष्ट्रीय एकता के समक्ष खतरा उत्पन्न करने की क्षमता थी, किस प्रकार सफलतापूर्वक समाधान किया।

India at the time of independence was a nation of over 500 princely states with multiple vernacular languages, dialects and ethnicities

Threat to national unity by language

- Viseelandhra and Samyukta Karnataka movements
- Khalistan Movements
- Autonomists - Intra State and Inter State Conflicts.
- Tribal secession - Demand for Greater Nagalim, Bodoland

Process in which India dealt with Linguistic Diversity & Unity

(1) Recognition to major spoken languages in constitution - Schedule 8

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(2) Autonomy to use of vernaculars at state level - in legislatures and Judiciary.

(3) Constitutional authority - Special Officer for Linguistic Minorities - Art 350B.

(4) State Reorganisation Commission and Act - recognised language as a basis to carve out states
E.g. Gujarat - Gujarati majority
Maharastra - Marathi majority

(5) Fundamental Rights - Art 29 & 30
- Right to establish educational institutions

In post independent period, nevertheless conflicts did come up

(1) Division of Assam and North East
- spearheaded by Tribal extremism like Mizo groups in Mizoram and

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Manipuri in Manipur, Chattisgarh, Jharkhand

(2) Insecurity in Southern States - Northern belt administration attempt to impose Hindi - attempt to separate as Dravida Nadu.

(3) Punjab insurgency, Telangana Movement - due to relative deprivation and regional disparities.

India stood the test of time

(1) SC recognised Right to agitate for our language - not a corrupt election practice.

(2) Devolving through local governments - PRIs, ULBs - 73rd & 74th constitution of amendment Acts 1992 and PESA Act 1996

(3) Assymetric Federalism - 5th & 6th Schedule, Basic autonomy in 371, 371A-I Articles.

(4) New Education Policy 2020 - Three language formula

→ The attempts of carving a united India from linguistic diversity of billions was difficult but an ongoing success for our Azadi ka Amrit Kaal.

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**14.** Bring out the factors, which led to decolonisation after the Second World War. Also, discuss the role played by India in this regard. **(250 words) 15**
उन कारकों का उल्लेख कीजिए, जिनके चलते द्वितीय विश्व युद्ध के बाद विउपनिवेशीकरण हुआ। साथ ही, इस संबंध में भारत द्वारा निभाई गई भूमिका की भी विवेचना कीजिए।

The second world war was a period of great conflict between Axis Powers and Allied Powers that ended in 1945 with an aggravated process of decolonisation due to failure of imperialism.

Factors leading to decolonization

(1) Acceptance of disadvantages of chauvinistic imperialism – war & devastating

(2) Shattering of world economy and inflation – Germany

(3) Loss of life and property
– 80 million deaths – 3% of world population in 1945.

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(4) Rise in free market concept - USA led hegemonistic capitalism

(5) Demands of colonies - rise in leadership, protests - absence of monetary & military power of imperialists to rule them anymore -

(6) Widespreading profit concept in neo colonialism — dependency through raw export and consumerist import.

(7) Social - intellectual forces - Gandhi, Nelson Mandela, Mao, Russian Revolution, Boer wars, Japan's loss in nuclear attack.

Role played by India

(1) Gave inspiration of Swadeshi Freedom Struggle.

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(2) Non Alignment Movement
- primacy to independence, decolonisation and self-rule → sovereignity.

(3) Identifying rights of all communities - women & SC-STs from the start.

(4) Role model of African and South American colonies.

(5) Import substition and planned economy - proved achievement of self rule in 1st Five Year Plan.

Decolonisation and devastation of Second world war in multiple ways contributed to a new world ~~world~~ order with evolution of United Nations - peace based system

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**15.** What are Marine Heat Waves (MHW)? Identify the causes of their formation and discuss their consequences for India. **(250 words) 15**

समुद्री ग्रीष्म लहरें (MHW) क्या हैं? उनके निर्माण के कारणों की पहचान कीजिए और भारत के लिए उनके परिणामों की विवेचना कीजिए।

Marine Heat waves, as per IMD, are the prolonged heat periods in oceans that are persistently high (>5°C) over average mean-sea temperature.

Causes of marine Heatwaves

(1) Natural

(1.1) Tropical region - high insolation, high salinity
- higher heating of water in summer

(1.2) Climatic effects from across world
- El Nino, Indian Ocean Dipole, MJ Oscillation - traveling heat from Atlantic and ~~marin~~ Pacific ocean.

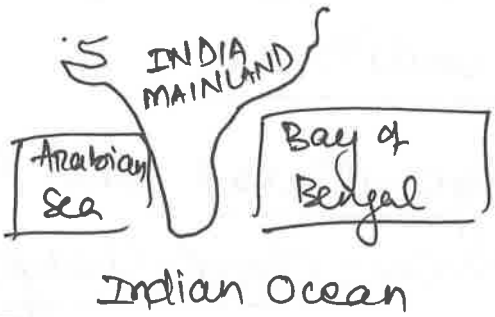


Fig: Marine Heat waves in India - influence of west & East Indian Ocean.

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(1.3) Monsoon Drift current - Heat Transfer from west Asia.

(1.4) Trade winds - cyclonic disturbances

(2) Anthropogenic

(2.1) Unscientific urbanisation - High emissions from automobiles, cooling systems, air conditioners.

(2.2) Agricultural and Industrial GHG emissions - Climate Change - Global warming - cyclones increasing in Arabian Sea as well

(2.3) Coastal Erosion - by mining and deforestration - sea incursion - entering of marine heat.

(2.4) High eutrophication - salinity → heat - waste disposal.

~~Implica~~ Consequences of Marine Heat waves in India

(1) Degradation of land - heating, high

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evaporation, unfit for agriculture.

(2) Loss of coastal biodiversity - coral death, mangroves dead, forest fires.

(3) Health effects on population - Hypertension, Strokes etc. as well as livestock.

(4) Less mixing of atmospheric particles - maintain heat - high pressure system - poor air quality

(5) Loss of livelihood in coastal communities - unemployment, poverty

(6) Boost to recurrent disasters - cyclones as well as droughts.

Measures to manage heat waves
- → Reduce hydrofluorocarbons use
- → Adopt Electric vehicles
- → Low/zero emission fuel - Ethanol, $H_2$
- → Afforestration
- → Waste treatment

Marine Heatwaves have to handled well by NDMA and SENDAI guidelines to reduce their ill effects.

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**16.** What are the geo-climatic conditions required for oil palm cultivation? Do you agree with the view that India should promote its large-scale cultivation to reduce import dependency? **(250 words) 15**

ऑयल पाम (ताड़ के तेल) की खेती के लिए आवश्यक भू-जलवायविक दशाएं क्या हैं? क्या आप इस विचार से सहमत हैं कि आयात निर्भरता कम करने के लिए भारत को इसकी बड़े पैमाने पर खेती को बढ़ावा देना चाहिए?

Oil seeds import contribute to the highest payments in India's foodbasket trade with majority from south East Asian nations like Malaysia, Indonesia

Geo climatic conditions for oil palm

1. High humid - equatorial
2. Both insolation with regular rainfall
3. Thrive in coastal areas
4. Require saline and iron rich soil - Lateritic with humus.
5. Grown in wet areas

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Cause of oil palm cultivation in India

① High import dependancy
② Nutrient requirements - diversify food cultivation over rice-wheat system.
③ Tribal and agricultural income - livelihood
④ Availability of rain forests - eastern ghats, north east and Andaman-Nicobar

However large scale cultivation may not be advised

① Demand extensive deforestration - like in south east Asia and Brazil.
② Degradation of soil quality
③ Cultivation requires artificial inputs - irrigation construction, fertilizers and pesticides.
④ Water stress - high demand.

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In limited scale it is being promoted

① National Mission on Oil Palm
- Cluster based approach – Viability Price and MSP to cultivators.

② Research of oil seed varieties

③ Innovation in alternate, edible oil sources
- Rice bran oil, sunflower oil, canola oil - production in sustainable methods

④ FSSAI awareness by Eat Right Initiative
- bad cholestrol in oil palm

India being an agri-primacy economy can promote oil palm cultivation in a nature of climate adaptive techniques that also lead to Ishokpalwai vision of Doubling Farm Income.

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**17.** In view of the changes witnessed in the state of Himalayan cryosphere, discuss the implications for India's water security. **(250 words) 15**

हिमालयी क्रायोस्फीयर (हिमांक-मंडल) की स्थिति में देखे गए परिवर्तनों को ध्यान में रखते हुए, भारत की जल सुरक्षा के लिए इसके निहितार्थों की विवेचना कीजिए।

Cryosphere is the region in Himalayan water system which remains frozen for extended periods of times.

Changes in Himalayan cryosphere

- Melting of glacier
- Flooding and landslides in low lying areas
- Sediment loss
- Pollution and Eutrophication

Positive Implications on India's water security

1. Exploitation of hydel power
   E.g. Alaknanda project
2. Glacier minerals exposed
3. Dams and storage of water.

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adressing needs of Himalayan locals as well as all of India.

## Negative Implications

① Cloudbursts and heat waves - extreme weather conditions

② Floods - Kedarnath
Landslides - Chamoli

③ Lack of transport and storage of water melting

④ Displacement of locals
⑤ Threat to biodiversity — aggravates condition of water insecurity.

## Water Insecurity in India

① Absence of irrigation - Bundelkhand, Vidarbha, Rayalseema

② NITI Aayog - cities - By 2030,

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Q1 cities to run out of water.

③ Deficient rainfall in Rajasthan, Dharwad etc.

**Solutions from cryosphere changes**

① River interlinking - Himalayan rivers - rise in Ganga, Yamuna level to drier rivers e.g. Ken Betwa link.

② Small scale hydel power units like PM KUSUM

③ Construction of sustainable transport & storage structures

④ Combating global warming.

Efficient tactical policies and guidelines are necessary to use cryospheric changes in Himalayan region to benefit for Atma Nirbhar water security.

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**18.** Ocean warming, ocean acidification and ocean deoxygenation are often referred to as the 'deadly trio' for marine life. Discuss. **(250 words) 15**

महासागरीय तापन, महासागरीय अम्लीकरण और महासागरीय विऑक्सीकरण को प्राय: समुद्री जीवन के लिए 'घातक त्रयी' के रूप में संदर्भित किया जाता है। विवेचना कीजिए।

The Assessment Reports of IPCC have repetitively advised on depletion of marine life through process of ocean warming (heat), ocean acidification (waste) and ocean deoxygenation (quality).

Causes of occean warming

① Climate change and global warming
E.g. Heating of Arabian Sea.

② Natural process by warm ocean current
~~California~~ - Gulf Stream in USA,
Aughlas in Africa.

③ High Greenhouse emissions - hydrocarbon and coal centred economy.

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## Causes of ocean Acidification

① Dumping untreated wastes e.g. Great Pacific Garbage Patch - manipulates (drop) the pH value of ocean, Oil spills.

② Reducing carbonate density - when mineral wastes like sodium, calcium enter - rise in $H^+$ concentration

③ Mixing of nitrogen, sulphur aerosols.

## Causes of ocean Deoxygenation

① Rise in bacterial and microbial population due to eutrophication

② Biological oxygen demand rises

③ Mixing with atmospheric ozone and high insolation - less free $O_2$ in water.

## Consequence of Deadly Trio on Marine Life

① Coral Depletion - expulsion of zooxanthelae

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(2) Less oxygen availability - fish kills

(3) High sulphur in Florida coast - Dead zones in Gulf.

(4) Tar balls from oil - death of surface organisms

(5) Deeper ocean life - degrades due to very fractional oxygen & sunlight.

(6) Harmful Algal Blooms - from heat prolonged water.

(7) Risk to coastal communities - loss of livelihood, changed weather pattern

(8) Induce marine disasters like cyclone, glacier melting at poles, thawing of permafrost

The 'deadly trio' of marine life must be researched and managed well through sustainable blue economy to improve quality of marine biodiversity.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**19.** Tribals in India continue to face myriad challenges with regard to healthcare. Discuss the issues faced by them in this context and suggest remedial measures. **(250 words) 15**

भारत में आदिवासियों को स्वास्थ्य देखभाल के संबंध में निरंतर अनगिनत चुनौतियों का सामना करना पड़ रहा है। इस संदर्भ में, उनके द्वारा सामना किए जाने वाले मुद्दों की विवेचना कीजिए एवं उपचारात्मक उपायों का सुझाव दीजिए।

India homes about 7% of tribal population with nearly 80% of them malnourished pointing to their poor health

Challenges in healthcare by Tribals

① Inaccessibility - living in rural and forest hinterlands.

② Affordability - High poverty and high out of pocket expenditure (50%) in India due to privatisation (4 times more than public healthcare)

③ Intoxication in tribals - substance and drug abuse higher in tribal men than others.

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(4) Unhygenic living conditions - Industrialisation and mining areas E.g. Sundergarh in Odisha, Buxar, Dantewada.

(5) Absence of preventive healthcare - only 7%

(6) Peculiar tribal challenge diseases E.g. Sickle Cell Anaemia in PVTGs.

(7) Low immunisation E.g. Nagaland only 14% children take vaccines.

(8) Primitive practices shy from institutional mothes-child health care.

**Remedial measures for Tribal Health Situation**

(1) Inclusion to insurance system - under PM Jan Aarogya Yojana and other state centred schemes.

(2) Research of tribal health & hygine

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- allocate funds from PM Swasth Bharat Yojana

(3) Upgradation of healthcentres and hospitals in remote areas - compulsory service by doctors

(4) Empowerment - vernacular education, awareness and employment - adopt better practices through Eklavya Schools, MSP on Minor Forest Produce by TRIFED.

(5) Penetrate immunity drives - in PVTGs, COVID for fighting diseases.

(6) Adopt tribal lifestyles - circular Economy

(7) Stress on van Bandhu Kalyan Yojana

(8) Curb narcotics trade in North East - Golden Triangle

Tribal communities can be better facilitated with targeted healthcare by Xaxa committee recommendation that takes an balance approach to integration and autonomy

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**20.** Reservation for women perpetuates a "proxy culture" as seen in the phenomenon of "sarpanch patis". In this context, discuss whether reservation can address the issue of poor participation of women in Indian politics. **(250 words) 15**

महिलाओं के लिए आरक्षण एक "प्रॉक्सी कल्चर" को बनाए रखता है जैसा कि "सरपंच पति" की परिघटना में देखा जाता है। इस संदर्भ में, चर्चा कीजिए कि क्या आरक्षण भारतीय राजनीति में महिलाओं की निम्न भागीदारी के मुद्दे का समाधान कर सकता है।

The 73rd and 74th constitutional amendment Acts 1992 made compulsory provisions of reserving 1/3rd seats in local governments for women.

Benefits of Reservation to women

1. Rise of local leadership
2. Predecessors of their unions and increase bargaining power
3. Gender parity in politics – some states made women reservation – 50%
4. Address women ~~sche~~ ~~scific~~ specific issues at local level – rights, hygiene, health, livelihood
5. Women led development for education, ~~heal~~ nutrition, infrastructure

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## Fallouts of the Reservation System

1. Rise in proxy candidates - sarpanch pati's
2. empowerment on paper only.
3. Reproduction of male hierarchy
4. Counter culture of increasing male chauvinism and violence.
5. Less devolution of power by states - concept of local government futile.
6. Elite feminism - rich wives become leaders.

Hence, reservation has to be augmented with other measures for real participation of women in politics —

1. Introduce gender budgeting
2. Check on proxy culture by district administrative system.

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③ Strengthen and increase women in police system at decentralised level

④ Penalty and incentive system in Panchayats Act — inspire women to work in competitive spirit.

⑤ Use of ICT - e.g. Whatsapp Group initiative by Ministry of WCD and Ministry of PRI - share best practices among women leaders.

⑥ Inclusion of women at all levels of politics - Legislatures of State (now only 9%), Parliament (14%)

⑦ Essential empowerment by education

Women in politics has been Indian archives real since Independence but a Nari Shakti centred movement of Azadi ~~Amrit Nirb~~ Ka Amrit Kaal can reform it.

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## GENERAL STUDIES (TEST CODE : 1836)

| | | | |
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| Name of Candidate | KASTURI PANDA | | |
| Medium Eng./Hindi | ENGLISH | Registration Number | 721089 |
| Center | ONLINE | Date | 29-08 |

### INDEX TABLE

| Q. No. | Maximum Marks | Marks Obtained |
|---|---|---|
| 1 | 10 | |
| 2 | 10 | |
| 3 | 10 | |
| 4 | 10 | |
| 5 | 10 | |
| 6 | 10 | |
| 7 | 10 | |
| 8 | 10 | |
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| 10 | 10 | |
| 11 | 15 | |
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| 14 | 15 | |
| 15 | 15 | |
| 16 | 15 | |
| 17 | 15 | |
| 18 | 15 | |
| 19 | 15 | |
| 20 | 15 | |

**Total Marks Obtained:**

**Remarks:**

### INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
   उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न–पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI**
   इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
   सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
   प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other that the authorized one.
   प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न–सह–उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
   प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
   उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

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Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar Delhi- 110009

# EVALUATION INDICATORS

1. **Contextual Competence**
2. **Content Competence**
3. **Language Competence**
4. **Introduction Competence**
5. **Structure - Presentation Competence**
6. **Conclusion Competence**

**Overall Macro Comments / feedback / suggestions on Answer Booklet:**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**All the Best**

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(इस भाग में कुछ ना लिखें)

1. The PM-AASHA scheme is aimed at improving procurement mechanism as well as ensuring remunerative prices for farmers. In this context, highlight the various components of the scheme and discuss the concerns associated with it. **(150 words) 10**

पीएम-आशा योजना का उद्देश्य खरीद तंत्र में सुधार के साथ-साथ किसानों के लिए लाभकारी मूल्य सुनिश्चित करना है। इस संदर्भ में, योजना के विभिन्न घटकों को रेखांकित कीजिए तथा इससे जुड़ी चिंताओं पर चर्चा कीजिए।

The Minimum Support Price and agri-produce procurement system only benefits 6% income of farmers which led to PM-AASHA scheme to targets its deficiencies and improvise the regime

Components of the PM AASHA scheme

(1) Assured procurement from remote areas and hinterlands

→ currently focus is ~~only on~~ mostly in bigger cities and North west India

(2) Diversify basket of procurement like pulses, oilseeds

→ now mostly rice-wheat concentration due to high MSP announcement on it

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(3) Viability Gap payment to farmers
→ in case when they do not get minimum benchmark at APMCs or private centres of sale

(4) Inclusion of private sector agencies to help FCI in transport and procurement

Concerns
- Farmers fear privatisation - lead to exploitation by corporates → Protests
- cyclic dependance on MSP - freebie & subsidy system → Moral Hazard, Fiscal Deficit
- Uncertainty in policies and over regulation in India like Essential Commodities Act → discourages private players

Despite the limitation, PM AASHA is viewed as a game-changing improvement to improve procurement & ensure remunerative price leading to doubling farmers incomes as per Ashok Dalwai report

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2. Explaining the concept of blended finance, discuss the role it can play in mobilizing capital for infrastructure development in developing countries like India.

**(150 words) 10**

मिश्रित वित्त की अवधारणा की व्याख्या करते हुए, भारत जैसे विकासशील देशों में अवसंरचना विकास हेतु पूंजी जुटाने में इसकी भूमिका पर चर्चा कीजिए।

Blended Finance is a process of investment that adopts strategic decisions to encourage investment towards social impact and sustainable development.

E.g. Viability Gap Funding for UDAN scheme - airports in small towns

Other Nudges used for blended Finance.
- → Social Stock Exchange
- → Tax Incentives - (SEZ).
- → Credit Guarantee Fund
- → NIP and Monetisation Pipeline
- → Attractive PPP models.

Role played by blended finance in mobilising capital for infrastructure

① Addressing energy needs - India to become 3rd largest by 2030 as per

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(इस भाग में कुछ ना लिखें)

(International Energy Agency)
E.g. PAT NET certificates on fulfilling renewable obligations

(2) Transport and connectivity penetration to rural areas - credit Guarantee fund under National Infrastructure Pipeline and Gati Shakti Plan.

(3) Improving ports, airports and logistics - support from min. of commerce and Industry to improve exports

(4) Digitizing infrastructure - expenditure in National Broadband Mission.

(5) Rural and urban Development - Housing structures - collaborating with builders.

Blended finance, especially in developing countries like India can go a long way towards 5 trillion $ economy.

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**3.** Discuss the challenges faced in the revival and revamp of dry ports in India and state the measures that can be adopted in this regard.

**(150 words) 10**

भारत में शुष्क पत्तनों (ड्राई पोर्ट्स) के पुनरुद्धार और सुधार में आने वाली चुनौतियों पर चर्चा कीजिए तथा इस संबंध में अपनाए जाने वाले उपायों का सुझाव दीजिए।

Dry Ports refer to the connective ports on land that facilitate as a transit for major or minor ports

Challenges faced in their revival and revamp

① Archaic ~~heier~~ hierarchical and bureaucratic structure - delays and red taprism

② Fear of retrenchment and job loss

③ Trade union activities

④ Deteriorating conditions - need to incentivise private players.

⑤ Unplanned and unscientific connecting lands.

⑥ Requires upgradation of vehicle fleet

Don't write anything this margin
(इस भाग में कुछ ना लिखें)

(7) ~~Reg~~ Resistance to Major Port Authorities Bill - aims to modernise

Measures to be adopted

(1) Lay out clear guidelines - regarding loading, unloading

(2) Digitize processes - lower scope of bribery and corruption

(3) Incentives and penalties of officers and workers - modernise the dry port administration

(4) Set up tribunals - for conflict resolution similar to Major Port Authorities Bill

(5) Investment in infrastructure - adopt electric mobility, green energy and road repairs.

Dry Ports as a medium of connectivity towards minor and major ports can assist reaching our export target of 1 bi USD by 2030.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**4.** Monoculture is one of the major threats to ensuring food security and sustainability of Indian agriculture. Discuss. **(150 words) 10**
एकल कृषि (मोनोकल्चर) खाद्य सुरक्षा और भारतीय कृषि की संधारणीयता सुनिश्चित करने के समक्ष विद्यमान प्रमुख खतरों में से एक है। चर्चा कीजिए।

Monoculture refers to the system of planting a single crop on any area of land repeatedly in all seasons.

Monoculture Regime in India
- → Tubewell Revolution
- → Rice & Wheat
- → Due to high MSP
- → Electricity subsidy to farmers
- → Fertiliser subsidies - urea.
- → Input credits.

Threat to food security

① Presence of micronutrient deficiency - Global Hunger Index - India - 106/116 despite surplus grain production.

② Lack of diversification of food basket - high import dependance for pulses and oilseeds.

③ Repurcussions on brain development - poor

Don't write anything this margin (इस भाग में कुछ ना लिखें)

learning outcomes in children.

(4) Risk of crop failures.

**Threat to sustainability**

(1) Soil health deteriorating - double the ratio of nitrogen due to fertilizers overuse

(2) Faulty practice like sugarcane in Vidarbha (dryland) - depletion of ground water.

(3) Rice cultivation is 30% of Indian wetlands - highest emitter of methane

(4) Recurrent droughts.

**Measures to adopt other practices**

- → Integrated Farming System - livestock, fishery ponds, Agro forestry
- → Penetrate drip irrigation
- → MSP on millets (dryland crops)
- → Multicropping - Relay cropping - include horticulture, pulses → Risk aversion

Adoption of alternative to monoculture reiterates our independence period vision of Art 48 - agriculture on modern lines.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

5. While highlighting the impact of single-use plastic on health and the environment, state the recent efforts taken by the government to curb plastic pollution in India. **(150 words) 10**

स्वास्थ्य और पर्यावरण पर एकल-उपयोग वाले प्लास्टिक के प्रभाव को रेखांकित करते हुए, भारत में प्लास्टिक प्रदूषण को रोकने के लिए सरकार द्वारा हाल ही में किए गए प्रयासों का उल्लेख कीजिए।

Single use plastics are polymers that are used only once, do not posses reuse value and non-biodegradable in nature.

Impact on health

(1) Humans - Bisphenol A - enters food chain when dumped - cancerous tendency

(2) waste collectors health - emissions & micro plastic exposure

(3) Animals - intestinal disorders.

(4) Plants - affects growth & hampers nutrient uptake from soil.

Impact on environment

(1) Long Retention - enters terrestial and marine habitats - pollutions

(2) Very difficult to degrade - lack of-

Don't write anything this margin (इस भाग में कुछ ना लिखें)

remediation technology

③ Degrades coastal ecosystems - Harmful Algal Blooms - loss of aphotic life, fish kills, coral depletion.

④ When burnt - soot & aersol - particulate matter in air.

**Efforts taken by government to curb plastic pollution**

① Ban on single use plastics - Based on plastic management Rules - June 2022 deadline.

② Extended Producer Responsibility - Polluter Pays Principle - take back, recycle

③ Project REPLAN - empower MSMEs involved in single use plastic manufacture - alternate livelihood.

④ LiFE movement at Glasgow COP - Stress on circular economy.

Gradual phase out of single use plastics and alternate practices adoption is a sabka sath sabka vikas approach to curb plastic pollution.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

6. Aapda Mitra – a force of volunteers from across India trained in disaster response – is becoming a game changer in the field of disaster management in the country. Elaborate. **(150 words) 10**
आपदा मित्र-आपदा प्रतिक्रिया हेतु प्रशिक्षित भारत भर के स्वयंसेवकों का एक बल-देश में आपदा प्रबंधन के क्षेत्र में एक गेम चेंजर के रूप में उभर रहा है। सविस्तार वर्णन कीजिए।

Aapda Mitras are the force of volunteers who are recruited, trained and deployed across India to facilitate disaster response in an agile and swift way.

**Features of Aapda Mitra scheme**

1. Young active alert volunteers
2. Financial incentives for contribution
3. Specialised training – for multiple as well as specific disaster response techniques
4. Employment opportunity – lates avenues to disaster management industry.

**Role of Aapda Mitras – Advantages**

1. Improvise pre-disaster strategy

Don't write anything this margin
(इस भाग में कुछ ना लिखें)

- technological empowerment for prediction and prevention
- manage drones, conduct hazard surveys

(2) Assist district administration relief & recovery tasks

(3) Participatory approach - Trained to manage disability inclusive methods.

Challenges

(1) Lower allocation of funds
(2) Generalised training
(3) Uncertain career - Disaster in an unforeseen event.
(4) Disaster misconceptions and lack of awareness not addressed.

Hapda Nitra is new aspirational initiative which can empower youth and manage disasters in an holistic way for a Safer India.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

7. Why is the rise in lone wolf attacks considered as a serious challenge for security agencies around the world? Highlight the role of the internet in exacerbating such attacks. **(150 words) 10**
विश्व भर में लोन वुल्फ हमलों में वृद्धि को सुरक्षा एजेंसियों के लिए एक गंभीर चुनौती क्यों माना जाता है? ऐसे हमलों की वृद्धि में इंटरनेट की भूमिका पर प्रकाश डालिए।

Lone wolf Attacks refer to to criminal tactics adopted by anonymous warfare to cause civilian damages and target strategic resources.

E.g. Charlie Hebdo - France
Easter Attack - Sri Lanka

Challenges for security agencies around the world

(1) Anonymity - Lack of traceability - often attempt attack as suicide

(2) Difficult to gather intelligence - no connective evidence

(3) Do not provide financial resource links.

(4) Most uncertain - difficult to predict or surveillance of attack time & place

(5) Manipulate strategic assets such as military camps or ports etc.

Don't write anything this margin
(इस भाग में कुछ ना लिखें)

Role of internet in excerbating lone wolf Attacks

① Facilitates cryptographic secrecy
- no evidence of communication with the criminal gang

② Internet penetration to difficult terrains - easies attacking in Jammu & Kashmir, also Naxal forests in Chattisgarh

③ Allows avenues of cyber warfare
- attack on surveillance channels and remotely disable drones.

Lone wolf Attacks are both internal and external threat to all countries around the world - its inclusion in UN-CCIT framework can facilitate better studies on them.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

8. The fundamental inefficiencies embedded in our military structures and processes are now being addressed through a slew of defence reforms in the country. Discuss. **(150 words) 10**
हमारे सैन्य ढांचे और प्रक्रियाओं में अंतर्निहित मूलभूत अक्षमताओं को अब देश में विभिन्न रक्षा सुधारों के माध्यम से दूर किया जा रहा है। चर्चा कीजिए।

With highest allocation of budget to Defence ministry and India being 2nd largest defence importer points to the need of defence reforms.

Fundamental inefficiences in military structure

① Lack of modernised and technological training
② High dependance on imports - for warfare
E.g. SYCO, Rafale, Akalu class submarines
③ Poor defence and border infrastructure - due to difficult terrains

Defence Reforms announced to address

① Agnipath scheme - create a younger

Don't write anything this margin (इस भाग में कुछ ना लिखें)

and agile military force

(2) Indigenisation of defence procurement
- incentives to Indian companies - SRIJAN portal

(3) Collaboration at international level for emerging technologies and hybrid warfare
- GPAI, Project Kautilya with Israel

(4) Upgraded surveillance system through cyber defence mechanism

(5) Comprehensive Borders Management System
- like BOLDQIT across Bangladesh, use of CCTVs, thermal sensors.

(6) Boosting defence exports - revenue generation

(7) Extension of PM Jan Aarogya Yojana to para-military forces - social security.

(8) Integrated Theatre commands [ITC]

→ Succesive defence committees like Kargil Review Report and Shekatkar report stress on PPP-GOCO model in defence for further reforms.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

9. In light of the recent establishment of the WHO Global Centre for Traditional Medicine in India, discuss the advantages and challenges in mainstreaming traditional medicine in the country. **(150 words) 10**

हाल ही में, भारत में डब्ल्यू. एच. ओ. ग्लोबल सेंटर फॉर ट्रेडिशनल मेडिसिन की स्थापना के आलोक में, देश में पारंपरिक चिकित्सा को मुख्यधारा में लाने के लाभों और चुनौतियों पर चर्चा कीजिए।

Recently, WHO has setup Global Centre of Traditional Medicine in Jamnagar, Gujarat for research and development of ancient healthcare practices.

Advantages of mainstreaming Traditional Medicine

(1) Find therapeutic and alternate cures to non-curable diseases like CANCER.

(2) Assist in treatments of systems along with modern medicine - without side effects

E.g. Yoga and Naturopathy more preferable than painkillers.

(3) Deep dive into more sustainable processes of medicine development

E.g. Sowa Rigpa and Ayurveda

Don't write anything this margin (इस भाग में कुछ ना लिखें)

(4) cut import dependance of India (like APIs from china)

(5) Preventive healthcare knowledge
- boost vaccine research.

Challenges in Traditional Medicine

(1) Lack of research and development
E.g. Homeopathy sometimes aggravates symptoms in Leukoderma

(2) No proper guidelines and less budget allocation

(3) Restraint and protest from other doctors
E.g. Recent agitation of giving them surgeon status.

(4) Perpetuates traditionalism and ritualism
- aggravate social inequalities, patriarchy due to religious sanctions.

Traditional Medicine in multiple ways can augment our health ecosystem in fighting future pandemics but with necessary studies on it to achieve SDG No 3.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**10.** Nano Urea Liquid has the potential to transform farming in India and across the world by improving productivity while reducing environmental pollution and input cost. Discuss. **(150 words) 10**

नैनो यूरिया लिक्विड में पर्यावरण प्रदूषण और इनपुट लागत को कम करने के साथ-साथ उत्पादकता में सुधार करके भारत और विश्व भर में कृषि कार्य को रूपांतरित करने की क्षमता है। चर्चा कीजिए।

Nano Urea Liquid uses the nano-technology practice for targeted effect of the urea fertilizer on soil at nanoscale ($10^{-9}$m).

**Potential of Nano Urea Liquid**

(1) works at nanoscopic scale - optimum utilisation to curb over use
(In India soil health on NPK fertilizer use is 8:3:1 while advised is 4:2:1.

Previous urea regime in India
- DBT
- Soil Health Card
- Neem coated urea

(2) Targeted intervention - maintains soil health

(3) liquid form - no scope of smuggling, diverting or black market sale

Don't write anything this margin (इस भाग में कुछ ना लिखें)

- prevents revenue loss

(4) Cheaper and easier process of manufacture - lower fiscal burden on subsidies

(5) Easier to procure and transport
- better storage processes - with no losses.

Reduces environmental pollution
- → Very low soil pollution
- → No carbon emission in manufacture process
- → Does not mix with ground water → Easier to be taken up by plant roots.
- → Emits no harmful / toxic chemicals

Challenges to Nano urea
- → Studies on phytotoxicity not yet rigorous
- → Nascent technology
- → Funds low for research.

Nano urea can thus improve standard of living in soil biodiversity and transform quality of livelihood of farmers.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**11.** Discuss the domino effect of high crude oil prices on the Indian economy. Also, enumerate the measures that India can take in this context.

**(250 words) 15**

भारतीय अर्थव्यवस्था पर कच्चे तेल की ऊंची कीमतों के डोमिनो प्रभाव की विवेचना कीजिए। साथ ही, भारत द्वारा इस संदर्भ में अपनाए जा सकने वाले उपायों को सूचीबद्ध कीजिए।

India fulfills 80% of oil and gas needs in energy sector through imported crude oils making high prices a cause of imported inflation. ~~to~~ D

State of crude oil dependance in India

→ Energy security for 18% of world population

→ Industrialisation and urbanisation - fuel & mobility needs

→ Very low indigenous basins like Bombay High, Gulf of cambay & Brahmaputra

↓ Nascent state of green energy adoption

Domino Effect of high crude oil prices on Indian economy

(1) Rising fiscal deficit – occupies highest basket of imports

Don't write anything this margin (इस भाग में कुछ ना लिखें)

(2) Burden on middle class and general citizens - for domestic (LPG) and vehicular needs (Petrol, Diesel).

(3) rising excise duty and non inclusion in GST regime.

(3) Perpetuates previous loans - repayment of oil bonds a challenges

(4) End of subsidy regime - currently based on market based Trade Parity Price

(5) Poor private sentiments - advancements in clean technology - reduced thrill in crude oil investment.

Measures to nullify effect on economy

(1) Diversify import destinations - averse the instability risk of west Asia.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

(2) Reduce import basket expenditure
- goal of 10% lowering by 2022

(3) Investments in Clean Energy

- Methanol Economy Fund
- PM JIVAN - Ethanol & E&D blending
- Hydrogen Energy Mission - Grey, Blue & Green
- Fuel Cell Research → Electric vehicles
- International cooperation - Green Finance From Glasgow Pact.
- Other blending like H-CNG.

(4) Promote Hydrocarbon Exploration Policy
- Transparent auctions, revenue-sharing model, allow commercial use - include private participation

(5) Burden on citizen reduce - inclusion in GST regime.

Reforms in India's crude oil and energy policies are a pre-cursor to achieving SDG No 7 and higher Human Development Index.

Don't write anything this margin
(इस भाग में कुछ ना लिखें)

**12.** The consistent high operating ratio of the Indian Railways is indicative of its incapability to generate high operational surplus. Explain the reasons behind this trend. Also, highlight the remedial measures taken by the government in this regard. **(250 words) 15**

भारतीय रेलवे का लगातार उच्च परिचालन अनुपात उच्च परिचालन अधिशेष सृजित करने में असमर्थता का संकेत है। इस प्रवृत्ति हेतु उत्तरदायी कारणों को स्पष्ट कीजिए। साथ ही, इस संबंध में सरकार द्वारा किए गए उपचारात्मक उपायों को रेखांकित कीजिए।

The profit margin of government in functioning, maintenance and operations of Railways is hardly about 5% revealing a trend of very low surplus

Reasons of high operating Ratio

(1) subsidised rates of travel

(2) Poor maintenance and upgradation investments E.g. Delay in mumbai-Ahmedabad High speed Railway

(3) Government monopoly → Bureaucratic Archaic Decision making → Security of Tenure → No incentive to improvise → Protests from railway unions → Less improvement → Government monopoly

Don't write anything this margin
(इस भाग में कुछ ना लिखें)

(4) Virtual absence of private excellence

(5) outdated technology

(6) continued dependance on non fossil sources.

(7) End of separate railway budget

(8) Corruption across Railways hierarchy

**Remedial Measures Taken by government**

(1) Railway Policy vision 2030
- electrification, fleet modernisation and increase cargo transport

(2) Private players inclusion and adopting best practices - Tejas by IRCTC

(3) corporate bureaucracy - modernize workforce - Indian Railway Management

Don't write anything this margin
(इस भाग में कुछ ना लिखें)

Service – single hierarchy

(4) Cleaning and maintenance of railway stations – under Swach Bharat Mission – beautification, Green curtains and Bio Toilets.

(5) Gati Shakti – NIP and Master Plan investments

(6) Reforms in Railway Board

(7) Digitizing processes – ticketing, scheduling, cancelling etc.

(8) Increase luxury fleet – more revenue generation capacity. – cross Pricing strategy.

Concerns → Retrenchment (officers)
→ Profiteering (privatisation)
→ Skilling & capacity building.

Railway reforms ~~are~~ can go a long way to our historical vision of united India – Ek Bharat Shresth Bharat if done in an inclusive way

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**13.** Micro food processing sector is the key driver of growth in the Indian economy as it encourages food processing innovation. In this context, state the challenges faced by the micro food processing sector and discuss how the recent initiatives taken by the government aim to address them.

**(250 words) 15**

सूक्ष्म खाद्य प्रसंस्करण क्षेत्रक भारतीय अर्थव्यवस्था में संवृद्धि का प्रमुख चालक है क्योंकि यह खाद्य प्रसंस्करण नवाचार को प्रोत्साहित करता है। इस संदर्भ में, सूक्ष्म खाद्य प्रसंस्करण क्षेत्रक द्वारा सामना की जाने वाली चुनौतियों का उल्लेख कीजिए और चर्चा कीजिए कि किस प्रकार सरकार द्वारा हाल ही में प्रारंभ की गई पहलों का उद्देश्य इनका समाधान करना है।

As per Shanta Kumar committee, food processing is done on only 3% of grains produced with 65% of industry having rural presence.

Challenges faced by micro food processing sector

① Less value addition - stress on grain exports in India

② Lower availability & penetration of credit facilities - about 40% rural loans have informal origin

③ Lack technology, manpower, funds and infrastructure

Don't write anything this margin (इस भाग में कुछ ना लिखें)

(4) Poor cold storage and sterilization infrastructure Eg. Milk - Butter.

(5) marketing, branding, labeling - still primitive - price realisation is low

(6) Under developed upmarket - downmarket linkages.

(7) Less awareness about govt help.

(8) Regional disparity

cooperatives in west & south

prevales - North west.

Government initiative to promote MFPs

(1) Mega Food Parks

(2) Tomato-Onion-Potato scheme (TOP) - extension to all fruits & vegetables.

Fig: Potential of Micro food processing in India (MFP)

Don't write anything this margin (इस भाग में कुछ ना लिखें)

(3) PM Kisan Sampada Yojana - Ministry of Food Processing

(4) PM Matysa Sampada Yojana - promote fisheries

(5) Agriculture & Animal Husbandary Infrastructure Fund

(6) Kisan Credit card - can be used for farm & storage infrastructure investment

(7) Agro Export Policy - commerce Ministry support to Sanitary & Phytosanitary Guidelines

(8) Ministry of cooperation formed - encourage Farmer producer organisations

(9) MUDRA, interest subvention for credit

Micro Food Processing can form a backbone for India as an export hub for processed food that supports Green Revolution 2.0

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**14.** Despite efforts by successive governments, equitable growth remains elusive and income inequality continues to persist in India. Discuss.
**(250 words) 15**

क्रमिक सरकारों के प्रयासों के बावजूद, न्यायसंगत विकास दुष्प्राप्य बना हुआ है और भारत में आय असमानता निरंतर बनी हुई है। चर्चा कीजिए।

According to Oxfam Report, richest 1% Indians hold more wealth than 70% at bottom whose wealth again increased by 34% (super rich) during COVID lockdown

Efforts of successive governments for equitable growth & inequality reduction

(1) Poverty alleviation programs like community development to MGNREGA.

(2) Livelihood generation - Swarna Jayanti Rozgar Yojana to NULM & NRLM.

(3) Women empowerment by Maternity Benefit Act, ICDS, Matru Vandana

Causes of the failure of above & inequality persisting

Don't write anything this margin (इस भाग में कुछ ना लिखें)

① Limitations in policy design
- lack of data (85% informal sector)
- very low coverage (MBA only for formal)

② corruption and misutilisation of funds
- siphoning MGNREGA, MDM allocations

③ social perceptions curbing gender equality – As per UNSocial Norms Index, 90% Indians believe are not efficient business & political leaders

- Glass ceiling
- Glass cliff
- educated employment in women
  - 19% STEM graduates
  - only 14% join industry
- sarpanch pati, proxy culture
- feminization of informal sector – 90%
- women taken part time, low paid work.

④ social deficiencies – cultural barriers that reproduce hierarchies – discrimination against Dalits, displacements of

Don't write anything this margin (इस भाग में कुछ ना लिखें)

Tribals in development projects (Saxena committee).

(5) Structural inconsistencies - Persistent malnutrition (NFHSS - 38% children stunted
→ 15% Indians malnourished in some form
→ 50% women anemic).

(6) Bureaucratic hurdles - Delays and scope of corruption

(7) Lacuna in political will - perpetuate freebies culture, vote bank and identity politics.

(8) Unintended challenges - As per Human Development Report of UNDP - 100 million Indians pushed to extreme poverty.

Some success evident
→ 2005-2015 → 270 million rose away from extreme poverty
→ Reservation → Intergeneration mobility
→ POSHAN Abhiyan
→ lowering TFR & improving sex ratio

Inequality as a challenge is precusor deviant of equitable growth which requires proper adress towards SDG Goal No 2, 5, 10.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**15.** Stating the factors that determine the employment situation of an economy in the long-term, discuss the measures that are needed for India to address its unemployment problem. **(250 words) 15**

किसी अर्थव्यवस्था की दीर्घावधि में रोजगार की स्थिति को निर्धारित करने वाले कारकों का उल्लेख करते हुए, उन उपायों की विवेचना कीजिए जो भारत में बेरोजगारी की समस्या के समाधान हेतु आवश्यक हैं।

With unemployment of situation of India reaching decades low at 7%, the problem has become a persisting policy change that halts economic growth.

Factors of employment in long term

1. Skilling and Job creation
2. Capital and Investment Expenditure.
3. Sectors of economy E.g. Disguised unemployment in agriculture
4. State of inflation - Phillips curve
5. Stable policy regime - innovation and startup culture with MSME support
6. Government incentives like Rozgar

Don't write anything this margin (इस भाग में कुछ ना लिखें)

Protsahan - for formalized employment

(7) social conditions - determines female labour force participation rate (FLFPR)

**Causes of high unemployment in India**

- Absence of data driven policies
  - 85% in informal employment
- lowering FLFPR
  - rise only as feminization of agriculture
- privatisation
  - outsourcing
  - contracting
  - ↓ seasonal unemployment
- ~~Poor~~ moral Hazard to work - culture of freebie like PDS grains & Amma canteen (Tamil Nadu)

**Measures needed to address unemployment**

(1) contextual skilling - preparedness for Industry 4.0

(2) creating level playing fields for privates - Easing of Doing Business,

Don't write anything this margin (इस भाग में कुछ ना लिखें)

GIFT city - tax incentives and detailed companies act guidelines

③ Labour code - reforms on social security, employer responsibilities

④ Empowerment of disadvantaged sections - make mobility feasible for women, tribals, Dalits - cut away workplace discrimination.

⑤ Funds like Electronics fund, Green Energy fund - job creation

⑥ Steps to formalise economy.

⑦ Urban sector MGNREGA

⑧ curriculum upgradation

⑨ Manufacturing share to 25%.

(NASSCOM survey: Found 25% graduates unemployable.

Tackling the unemployment crisis in India is an essential facet to our Atma Nirbhar Bharat.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**16.** In view of the rapidly increasing socio-economic damage caused by disasters, integrating Disaster Risk Reduction (DRR) into development planning requires an effective stakeholder engagement mechanism. Discuss. **(250 words) 15**

आपदाओं के कारण तेजी से बढ़ रही सामाजिक-आर्थिक क्षति को देखते हुए, आपदा जोखिम न्यूनीकरण (DRR) को विकास योजनाओं में एकीकृत करने के लिए एक प्रभावी हितधारक जुड़ाव तंत्र की आवश्यकता है। विवेचना कीजिए।

Disaster Risk Reduction is defined by UN as a set of organised steps that aims at decreasing socio-economic ~~data~~ damages before, during and after disasters.

Socio Economic Damage of Disasters

→ loss of life
- casualties
- deaths
- outbreaks & epidemics

→ loss of livelihood
- push to poverty
- aggravate vulnerabilities
- loss of income
- destitution

→ loss of property
- construction lines
- electricity failure
- network closures
- habitat losses
- ecosystem degradation

Don't write anything this margin (इस भाग में कुछ ना लिखें)

~~Redu~~

**Leveraging stakeholder engagement mechanisms to DRR**

(1) **Preparedness** – development planning of resilient infrastructures, guidelines by government - Building Bye laws, Buffer Stocks and local empowerment

(2) **Prevention and Prediction**

→ Technology stakeholders
- early warning system
LEWS for landslides by GSI
INCOIS for cyclones,

↓ IMD predictions,
CSIR - disease research

→ Hazard zonation mapping by NDMA, MoEarth Science, Drone surveys

(3) **Mitigation** – National and State level Disaster Mitigation funds

Don't write anything this margin (इस भाग में कुछ ना लिखें)

- empowering locals and District Disaster Management Agency.

(4) Rehabilitation
- clear layout of entitlements of victims
- Disaster Insurance
- Survey of alternate habitation & livelihoods

(5) Rescue & Relief Activities
→ volunteers like Aapda Mitras
→ International cooperation by coalition on Disaster Resilient Infrastructure (CDRI).

(6) Reconstruction
→ Reinstating activities
→ Climate smart PPPs
- involve privates
→ engage civil society NGOs
→ skilling of engineers, doctors.

Disasters can push population to extreme poverty, effective stakeholder mechanism envisaged in SENDAI framework is an urgent need.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**17.** Provide an account of the existing carbon trading mechanisms in India. Also, discuss the significance of an efficient carbon trading market in the country and state the challenges that currently exist. **(250 words) 15**

भारत में मौजूदा कार्बन व्यापार तंत्र का विवरण प्रस्तुत कीजिए। साथ ही, देश में एक कुशल कार्बन व्यापार बाजार के महत्व पर चर्चा कीजिए और वर्तमान समय में विद्यमान चुनौतियों का उल्लेख कीजिए।

Carbon Trading Market refers to the secondary market aimed at reducing carbon emissions through sale and purchase of carbon saving certificates.

Existing carbon Trading Mechanism in India

1. Indian Energy Exchange (IEX)
2. PXIL - Power Exchange India Limited
3. GTAM - Green Term Ahead Market
4. Energy Saving Certificates - by Bureau of Energy Efficiency - Perform Achieve Trade Scheme.
5. Renewable Purchase Obligations - for industries and power sector

Don't write anything this margin (इस भाग में कुछ ना लिखें)

(6) Bundling system - Renewable Generation Obligation on Thermal Power Plants

(7) International Level - India ~~purchange~~ purchase carbon credits & Joint Implementation project — USA ~~USAIF~~ - USAID
UK - SUNRISE project
Netherlands - LOTUS HR.

(8) BSE - GREENEX.

**Significance of carbon trading**

(1) Reduce carbon emissions by polluters - cap their carbon footprint

(2) Reduces air pollution & marine eutrophication
NCR region.

(3) Achieving Panchamrit target of reducing by 50% - 2030.

(4) Facilitates green financing

(5) Encourage climate smart PPPs, climate adaptive manufacturing

Don't write anything this margin (इस भाग में कुछ ना लिखें)

(6) Funds for sustainable Agriculture

(7) Research on green energy - ethanol, hydrogen.

**Challenges to Carbon Trading in India**

(1) under-developed stock market and share-exchange penetration - NSE, BSE major players only.

(2) Limited retail participation

(3) continued high dependance on coal - 70% of energy needs

(4) most companies fail to comply

(5) Absence of strict Environment Impact Assessment regime.

(6) Less incentive for renewable research - achievers keep certificates in surplus.

Carbon Trading Market in India can be beneficial in augmenting the social stock Exchange and achieving Net zero by 2070.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**18.** The menace of drug trafficking in India has been on a rise due to a mix of factors, both internal and external. Discuss. Also, state the challenges posed by drug trafficking to India's national security. **(250 words) 15**

भारत में ड्रग ट्रैफिकिंग का खतरा आंतरिक और बाह्य दोनों कारकों के समन्वय के कारण बढ़ रहा है। चर्चा कीजिए। साथ ही, भारत की राष्ट्रीय सुरक्षा के समक्ष ड्रग ट्रैफिकिंग से उत्पन्न चुनौतियों का उल्लेख कीजिए।

Drug Trafficking [DT] is an organised crime syndicate thriving on a parallel economy that has socio-economic and health repurcussions.

External factors of DT

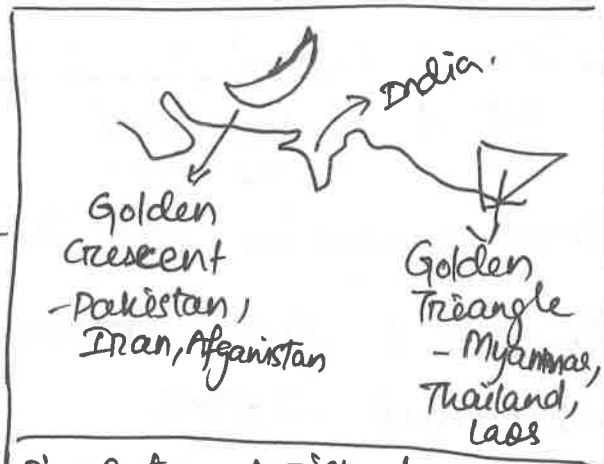


Fig: External risk of DT to India

① Golden crescent - on North-west borders - high substance abuse in Punjab.

② Golden Triangle - North East borders - high intoxication in - tribal men

Internal Factors of DT - ① unemployment

Don't write anything this margin (इस भाग में कुछ ना लिखें)

and misleading youth

(2) individualism - modernity fallouts of stress and high aspirations.

(3) Radicalisation - indoctrinating agents of terror outfits

## Challenges posed by DT

(1) Links to other criminal networks - involvement in money laundering, counterfeiting and terror financing.

(2) Inclusion of Indian youth in terrorism - insurgency in North East, extremism in Jammu & Kashmir.

(3) Facilitate arms smuggling

(4) Citizen security - Exchange of drugs for human trafficking (women).

Don't write anything this margin (इस भाग में कुछ ना लिखें)

(5) Tax evasion - hawala & loss to exchequer.

(6) Health repurcussions - reduces productivity of labour.

(7) propagate riots, conflicts, violence, fake news and rumour mongering.

Steps taken against DT
- → Inclusion in PMLA regime
- → NDPS Act
- → Cooperation & Ratification of UN convention
- → Nasha Mukt Bharat Abhiyan
- → Awareness drives.
- → Including moral education to youth

The menace of drug trafficking is an abhorrent crime that requires an immediate eradication plan at international level.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

**19.** The Andaman and Nicobar islands' strategic significance in the Indian Ocean region (IOR) has been underplayed by India's policy of 'masterly inactivity and benign neglect'. Critically discuss. **(250 words) 15**

हिंद महासागर क्षेत्र (IOR) में अंडमान और निकोबार द्वीप समूह के रणनीतिक महत्व को भारत की 'कुशल अकर्मण्यता और सौम्य उपेक्षा' की नीति के तहत कम करके आंका गया है। समालोचनात्मक चर्चा कीजिए।

The Andaman and Nicobar Islands are India's strategic assets and land for marine connectivity, trade and security in Eastern Indian ocean.

Masterly Inactivity in A&N Islands

① Neglect in trade and transport agreements

② Overlooked development of locals
- holds PVTG populations like Sentinelese and Andamanese.

③ Underdeveloped tourism potential
- pristine beaches, sand bar islands

Don't write anything this margin (इस भाग में कुछ ना लिखें)

and corals.

(4) Poor security, defence and military presence.

**Relative presence of A&N Island security**
- → Presence of INS Baaz
- → naval ports
- → encourage private
- → undersea-link from Tamil Nadu - internet penetration

**Benign neglect of strategic asset**
- → majority inhabitation absent
- → Central governance of Union Territory
- → underdeveloped local politics & governance
- → Shyness in PVTGs
- → Almost no diplomatic visits or high profile events
- → Poor investment in local industry & tourism
- → No exploration policies

Don't write anything this margin (इस भाग में कुछ ना लिखें)

However, strategic importance being recognised and improvised gradually -

① Renaming of Neil, Ross, Barren Islands
→ Swaraj Dweep, Saheed Dweep has re-energised awarness in mainland

② Connectivity improved - flights from Kolkata, Bangalore, Chennai airports

③ coral protection initiatives by coastal Regulation Rules.

④ mangrove restoration - rain forests.

⑤ Increasing military presence.

⑥ supporting local business - proliferation of cafe, resorts, startups.

The Andaman and Nicobar Islands as a strategic significant island has to be incorporated to our vision of Azadi Ka Amrit Kaal.

Don't write anything this margin
(इस भाग में कुछ ना लिखें)

**20.** India has recently commissioned the world's first large International Liquid-Mirror Telescope (ILMT). How will the newly commissioned telescope aid in India's astronomical observations and research? **(250 words) 15**

हाल ही में, भारत ने विश्व का पहला विशाल इंटरनेशनल लिक्विड-मिरर टेलीस्कोप (ILMT) स्थापित किया है। यह नवनिर्मित टेलीस्कोप खगोलीय पर्यवेक्षणों और अनुसंधान में भारत की किस प्रकार सहायता करेगा?

International Liquid Mirror Telescope has been introduced in India as a facilitator of advanced space and astronomical developments.

Aid in observations and Research

(1) Multi wavelength capability and increased area of vision

(2) Provide inputs on space militarisation

(3) Method of installation under water - safe, secure and secret way of surveillance possible.

(4) Helps predict astronomical events like asteroid impacts and helps in

Don't write anything this margin (इस भाग में कुछ ना लिखें)

Blackholes

(5) Facilitate research on water and air quality - atmosphere of distant galaxies

(6) Encourage private participation through INSPACE guidelines

(7) Better insights - assist in space tourism

(8) Find effects & increase in space debris.

(9) Remote sensing, land graphing and connectivity advantages

(10) Promote an era of innovation.

The ILMT as an new entrant to Indian astronomical industry can foster scientific ecosystem and reduce brain drain.

Don't write anything this margin
(इस भाग में कुछ ना लिखें)

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## GENERAL STUDIES (TEST CODE : 2211)

| | | | |
|---|---|---|---|
| Name of Candidate | KASTURI PANDA | | |
| Medium Eng./Hindi | ENGLISH | Registration Number | 721089 |
| Center | ONLINE | Date | 08-07 |

### INDEX TABLE

| Q. No. | Maximum Marks | Marks Obtained |
|---|---|---|
| 1 | 10 | |
| 2 | 10 | |
| 3 | 10 | |
| 4 | 10 | |
| 5 | 10 | |
| 6 | 10 | |
| 7 | 10 | |
| 8 | 10 | |
| 9 | 10 | |
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| 11 | 15 | |
| 12 | 15 | |
| 13 | 15 | |
| 14 | 15 | |
| 15 | 15 | |
| 16 | 15 | |
| 17 | 15 | |
| 18 | 15 | |
| 19 | 15 | |
| 20 | 15 | |

**Total Marks Obtained:**

**Remarks:**

### INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
   उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न–पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI**
   इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
   सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
   प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other that the authorized one.
   प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न–सह–उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
   प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
   उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

16-B, 2nd Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar Delhi- 110009

# EVALUATION INDICATORS

1. **Contextual Competence**
2. **Content Competence**
3. **Language Competence**
4. **Introduction Competence**
5. **Structure - Presentation Competence**
6. **Conclusion Competence**

**Overall Macro Comments / feedback / suggestions on Answer Booklet:**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**All the Best**

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(इस भाग में कुछ ना लिखें)

1. The Cholas are inextricably linked with the zenith of Dravidian art and architecture. Comment. **(150 words) 10**
चोल द्रविड़ कला और स्थापत्य की पराकाष्ठा से अनन्य रूप से संबद्ध हैं। टिप्पणी कीजिए।

The Chola empire period started in southern India since the megalithic age on the banks of river Kaveri continuing upto around 700 AD.

Architectural patronage of the Cholas are represented in the Dravidian Art and Architecture.

(1) Building of magnificient temples E.g. Brihadeswar Temple by Rajaraja I, Gangaikondacholapuram Temple by Rajendra I, Airavateswar Temple by Rajaraja II

(2) Excellence sculpting features like river goddesses, open pradakshina patha, huge boundary walls and

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(इस भाग में कुछ ना लिखें)

intricate detailing in gopurams.

(3) Chief religious attachment
- Hindu culture

(4) Use of elaborate structures of nandi, yaksha & yakshi.

(5) Speciality in Chola sculpture is the Nataraja - God Shiva

Zenith of Dravidian Art had underlying contributions

- Chola Naval power - links with South east Asia - cultural inspirations
- Patronage to Hindu religion
- Temple Paintings
- investments in secular knowledge E.g. Metallurgy in bronze statues.

The zenith of art and architecture of Cholas has been acknowledged world over in its recognition by UNESCO of Great Living Chola Temples.

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2. Among the major legacies of the Indian freedom movement, civil liberties formed an important one. Analyse. **(150 words) 10**
भारतीय स्वतंत्रता आंदोलन की प्रमुख विरासतों में, नागरिक स्वतंत्रता ने एक महत्वपूर्ण भूमिका निभाई है। विश्लेषण कीजिए।

The civil liberties formed an important cause for Indian freedom struggle as it was time and again curbed by the colonial rulers, coupled with demands of restoration by nationalist movements.

The legacy repressions of civil liberties by British –

(1) curb on freedom of press E.g. vernacular Press Act 1878 (VPA), censorship Acts.

(2) reduction in age of civil services E.g. from 21 to 18 by Lord Lytton.

(3) repression of peasant movements, forceful cultivation of cash crops leading to Indigo crisis 1860, Pabna Revolt 1880.

(4) Division of Bengal by Curzon

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(4) inhumane working conditions in factories.

(5) interference in religious affairs
E.g. Free conversions & lex Loci Act

(6) high taxes on indigenous salt and textiles. E.g. Calico Act.

Efforts by nationalists brought about reforms like

(1) Metcalfe & Lord Ripon's liberation of press & withdrawal of VPA 1878

(2) Trial by jury & repeal of Ilbert Bill

(3) Government of India Act 1858 promised no interference in religious affairs.

(4) Passage of Factories Act 1881 - regulation of child labour and holidays.

(5) Santhal Parganas Act, Chotanagpur Tenancy Act - Regulation in tribal lands

The cumulative efforts of restricting and liberalising by British & nationalists on civil liberties ultimately led to Indian Independence Act 1947.

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(इस भाग में कुछ ना लिखें)

**3.** The Berlin Conference of 1884-85 in many ways set the ground for the scramble in Africa. Elucidate. **(150 words) 10**

1884-85 के बर्लिन सम्मेलन ने विभिन्न प्रकार से अफ्रीका में विभाजन का आधार तैयार किया। स्पष्ट कीजिए।

Berlin conference refers to the concurrence of European nations regarding trade and imperialisation of Africa in 1884-85.

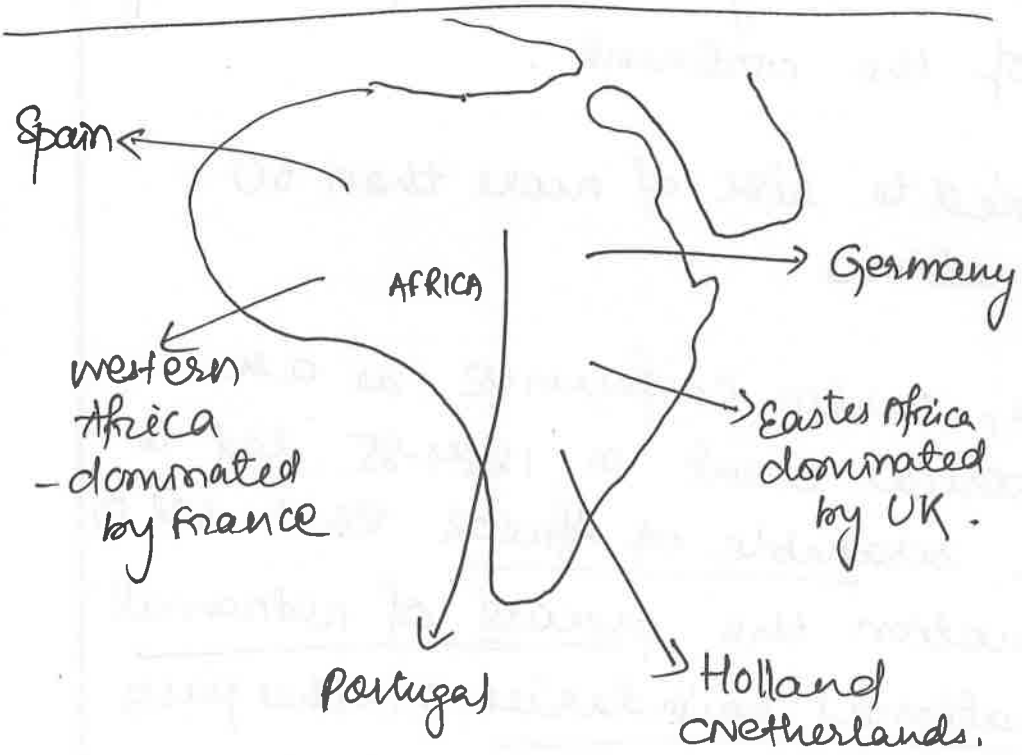


Fig. Scramble of Africa.

The ground for scramble in Africa was set by -

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① Strifes between local tribal chieftians

② Inroads to trade relations and investments leading to ~~debt traps~~ debt traps.

③ Bilateral agreements - partitioning of the continent.

④ Led to rise of more than 60 nations.

Thus, Berlin conference as an historical event in 1884-85 led to the scramble of Africa that set in motion the process of redrawal of national boundaries in other parts.

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4. What is a cloudburst and what are its effects? Why are they more frequent in the Himalayan region? **(150 words) 10**
बादल फटना क्या है और इसके क्या प्रभाव हैं? हिमालयी क्षेत्र में इनकी आवृत्ति अधिक क्यों है?

Cloudburst refers to a sudden rise in rain bearing clouds and winds with high precipitation and uncontrolled water flow.

Effects of cloudbursts

- Flooding
  - submergence of low lying areas, plains
  - E.g. Idukki
- Landslides
  - water pushes landmass
  - E.g. Chamoli, Tehri
- loss to local biodiversity
- huge loss to life and property
  - pushing masses to poverty.

Causes of cloudburst's devastating effects-

① High rise structures, unplanned constructions such as Idukki in Kerala

② Huge ~~energy po~~ hydel power plants, dams
- obstructs natural flow of water
E.g. Tehri.

③ Absence of water-storage systems

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E.g. Meghalaya - Cherapunji.

(4) Huge population pressure - beyond carrying capacity E.g. Road clogging in cities like Mumbai, Bangalore - absence of percolation grounds.

Cause of high frequency in Himalayan region -

(1) Meterological causes - Snowfall from snow-cladden clouds - pushes glaciers to shore.

(2) Risk of steep slopes.

(3) Anthropogenic causes - use of greenhouse gases, agri-industrial emissions - boost global warming and extreme events.

(4) unscientific urbanisation in Himalayan cities - prone to landslides.

(5) Unregulated tourism industry.

Mitigating effects and frequency of cloud-bursts in Himalayas requires implementing B K Chaturvedi committee suggestion of well defined assessment of the region.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

5. Despite its potential, there are several challenges in the implementation of the Ken-Betwa Link Project. Discuss. **(150 words) 10**
केन-बेतवा लिंक परियोजना की क्षमता के बावजूद, इसके कार्यान्वयन में अनेक चुनौतियां विद्यमान हैं। चर्चा कीजिए।

The Ken-Betwa link project is a part of Interlinking of Rivers mission from water surplus regions to deficient regions.

Potential of the Ken-Betwa link -

① Availability of water of agricultural zones in Madhya Pradesh - boost to pulses, millets etc. production.

② Betwa lies in Bundelkhand region - dryland - addressing future water scarcity is essential.

③ Support to industrial region in UP

④ Better interlinking of Yamuna rivers E.g. combat pollution like froth in waters.

⑤ optimum supply of water to households

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- under Jal Jeevan Mission.

Challenges in its implementation -

1. Plateau structure of region
   - difficulty in constructions.
2. less availability of skilled labour.
3. risk of water deficiency in Ken region
4. may affect biodiversity - region neighbouring Pench National Park.
5. risk to the mugger crocodiles.
6. if proper oversight is reduced
   - waste dumping & choking of channel may increase.

The Ken-Betwa link as part of River linking is an ambitious plan for achieving SDG6 but a proper research prior to implementation is essential.

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6. Identify the issues related to production and supply of coal in India. How can these issues be addressed? **(150 words) 10**
भारत में कोयले के उत्पादन और आपूर्ति से संबंधित मुद्दों की पहचान कीजिए। इन मुद्दों का समाधान किस प्रकार किया जा सकता है?

Coal is a non-renewable fossil fuel source of energy comprising 70% of thermal power plant needs.

Its other uses included raw material in steel, cement and other alloy industries.

Identification of issues in production and supply is thus crucial

Challenges in production –

1. Unequal distribution – concentration in Singhbhum region & eastern India
2. Odisha, Chattisgarh, Jharkhand – high tribal population
3. Issues of land acquisition, displacement, rehabilitation
4. poor quality of Bituminous coal – gondwana formations.

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(5) High ash content - issues of disposal

(6) Rathole and illegal mining

(7) corruption - collusion between industrialists and local politicians
- loss of taxes.

(8) primitive technology and increase in legacy ~~ash~~ waste.

**Challenges in supply -**

(1) Depletion of existing resources.

(2) Low diversification of non-coking coal imports - over 50% from Indonesia.
- high current account deficit

(3) poor technology development - research funds increasing towards renewable sources.

(4) carbon imperialism - backlash of developed economies.

**Addressing the issues**

- coal miners health insurance
- auctioning and commercial use allowed - Coal Policy 2021
- Development of non-fossil and alternate mineral sources
- Technology - coal Bed Methane, Gassification
- Proper regulation
- Shale Gas, Tight Gas, Geothermal Energy

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**7.** Present the geographical distribution of agro-based industries in India and discuss the challenges faced by them. **(150 words) 10**
भारत में कृषि-आधारित उद्योगों के भौगोलिक वितरण को प्रस्तुत कीजिए और उनके समक्ष आने वाली चुनौतियों की विवेचना कीजिए।

While agricultural production contribution to GDP is decreasing, agro-based industries can compensate for the agro-employment and increased India's manufacturing sector GDP.

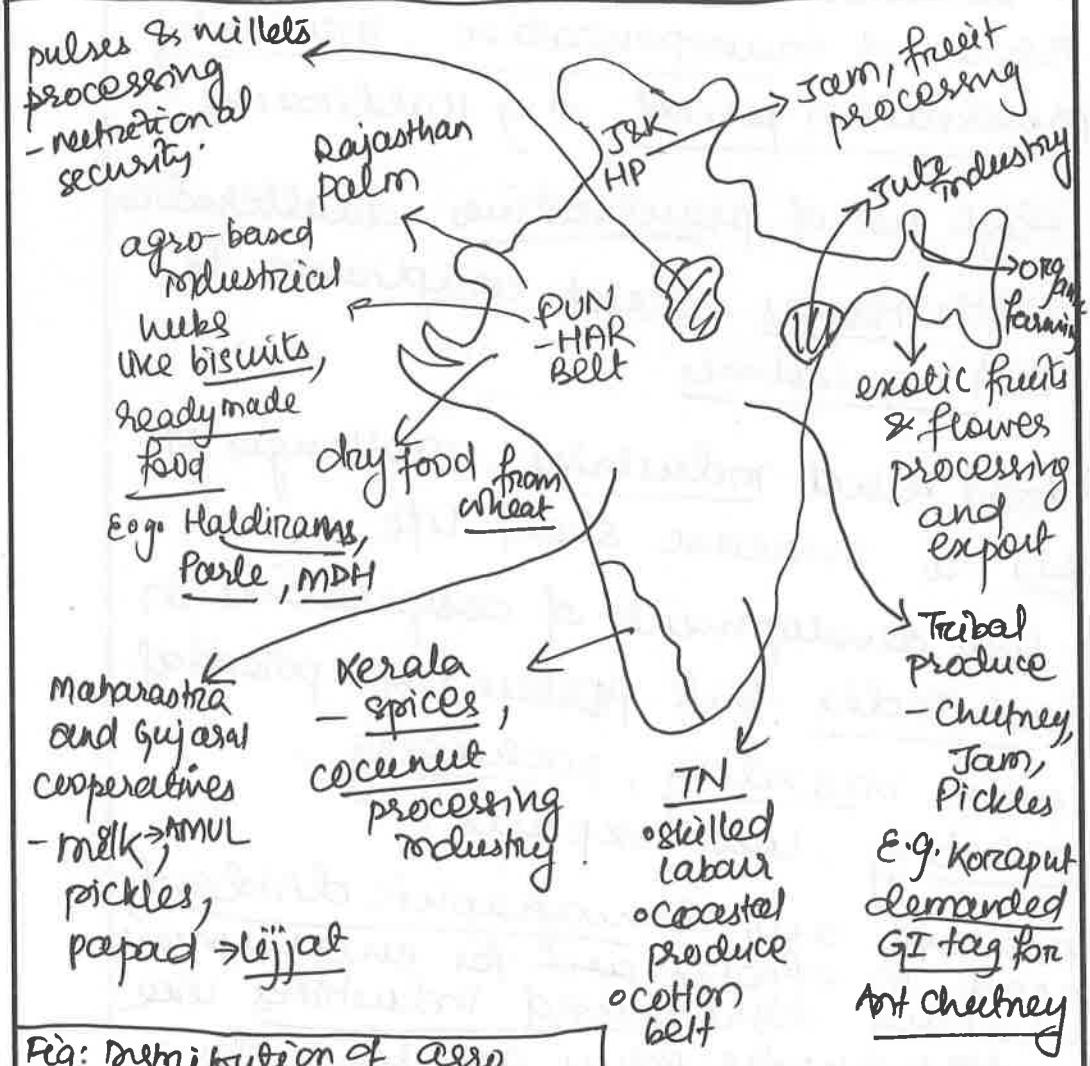


Fig: Distribution of agro based industries.

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Challenges faced by agro-based industries

① seasonal nature - cyclic unemployment
e.g. cotton and Jute region - limited harvests per year.

② large scale industrial concentration in Northwest - unequal distribution - issues of transportation, increasing preservation period e.g. Haldirams.

③ High use of preservatives - adulteration - health issues - strict compliance to FSSAI guidelines.

④ food based industries - challenges of R&D to increase shelf life.

⑤ low development of cooperatives in East India - but possess high potential

⑥ poor branding, packaging, marketing - low exports.

To achieve our demographic dividend, increase in efforts ~~are~~ for employment generating agro-based industries like Agro Export Policy are being done.

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8. The caste system continues to be one of the key drivers of poverty and inequality in India. Discuss. **(150 words) 10**
जाति व्यवस्था भारत में निर्धनता और असमानता के प्रमुख चालकों में से एक बनी हुई है। विवेचना कीजिए।

Caste system is a means of stratification of society in hierarchically arranged groups with attached disabilities and and privileges.

E.g. Access to priestly and reeling activities to high castes - high income but manual scavenging castes to untouchables - pushing them to poverty.

Caste system as a driver of poverty

(1) As per National Human Rights commission Report by 2015 - 90% of manual scavengers were SCs - with railways & municipalities as biggest employers.

(2) Traditionally - lower castes - poor access to land ownership - low social mobility - no rent income.

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(3) Outcasting of inter-caste marraige couples - loose inherital & ancestral wealth - pushed to poor living.

Caste as a drivers of inequality

(1) Traditional dominant castes - high income from land - also dominate in politics - gain high mobility

(2) women of upper castes - treated as objects of prestige - high educated unemployment

(3) majority lower caste women - employed as domestic workers, informal workers.

(4) casterisation of politics - increase identity based rifts - caste communalism increases - usurp lands of Dalits, denial of access to public resources.

While institution of caste increases disparity in Indian society, it is also diminishing with middle class, secular employment and fundamental rights driven constitution.

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**9.** Discuss the issues faced by domestic workers in India. Also suggest measures that can be taken to empower them. **(150 words) 10**
भारत में घरेलू कामगारों द्वारा सामना की जाने वाली समस्याओं की विवेचना कीजिए। साथ ही, उन्हें सशक्त बनाने हेतु किये जा सकने वाले उपायों का भी सुझाव दीजिए।

Domestic workers refer to the informally employed persons to perform household tasks with low pay and no social security.

Issues faced by domestic workers-

① Exploitation by employers - high working hours, lower pay, no holidays.

② Dominated by women - but suffers policy paralysis - due to no data collection and absence of regulation.

③ risk of marginalisation - sexual assaults and vidence - applicability of POSH Act is lacking.

④ no social security benefits like ESIC and EPFO.

⑤ possess poor skill - issue of no alternate

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income

(6) double burden - perform domestic work at ~~own~~ home also

Measures to empower them -

(1) Rise of gig economy and intermediate aggregator E.g. urban clap - can increase data and regulation of the work

(2) Skilling of women

(3) Extension of Labour code ~~कोड~~ - for equal pay.

(4) Inclusion in social security benefits like insurance, retirement benefits.

(5) States announcing salary to housewives - for domestic work

(6) Regulation in urban areas - increase POSH Act penetration by local bodies.

Empowerment of domestic worker is precursor to achieving SDG Goal No 5 - gender equality.

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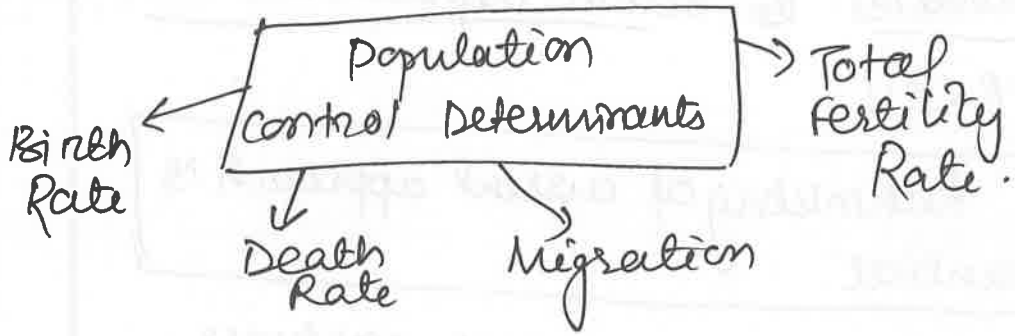
**10.** Given the deeply gendered impact of population control measures, examine the need to rethink the current approach of population control measures in India. **(150 words) 10**

जनसंख्या नियंत्रण संबंधी उपायों के गहन लैंगिक प्रभाव को देखते हुए, भारत में जनसंख्या नियंत्रण उपायों के वर्तमान दृष्टिकोण पर पुनर्विचार करने की आवश्यकता का परीक्षण कीजिए।

Population control is a set of practices to regulate the growth of population and its maintenance at an optimum level.




Gendered population control in India

(1) Operative procedures - 7% vasectomy but tubectomy as high as 93%.

(2) contraceptive medicines and techniques E.g. Pills - concentrated on women

(3) awareness drives include no males E.g. ASHA workers - only women

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Impact of gendered measures -

① continuity in male chauvinism
② persistence of myths about divine curse when contraception is on men
③ Lowering TFR in India and other countries to below replacement level.
TFR < 2.1.

Rethinking of current approach is essential

① Equal burden on both partners - equality in society - with rise in income and both employed parents
② Inclusion of males in awareness drives.
③ Upgradation of family planning as optimum offspring - not least offspring as per choice and income
④ addressing myths & rumors

Population control is a part of India's inclusive growth and human development agenda to become 5 trillion economy

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**11.** Examine the impact of the Sramana tradition on the Vedic religion and its relation with the emergence of Jainism, Buddhism and Ajivika sects.
**(250 words) 15**

श्रमण परंपरा के वैदिक धर्म पर प्रभाव और जैन, बौद्ध तथा आजीवक संप्रदायों के उद्भव के साथ इसके संबंध का परीक्षण कीजिए।

Sramana tradition refers to the rigorous and extreme religious and cultural practices promoted in vedic religion with differential prescriptions on hierarchical groups.

Examples
- → women not allowed to read vedas & learn Sanskrit
- → rigorous rituals like idol worship, havans, animal sacrifice, fasts etc.
- → social segregation and disabilities of untouchables - the outcastes.

Impact of the sramana tradition on Indian society —

① Backlashes from community - austerity in practices, increased gap

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between rich and poor
E.g. High taxes on peasants as an offering to god-like kings.

(2) collusion between priestly & rulers
- free land donations in return of glorification in literature - exploitation of the masses.

(3) rigidity in social life - recurrent rituals, yatras, yajnas - low leisure

(4) strict chaturvarna system - humiliation of sudras and complete marginalisation of the outcastes like Chandalas etc.

(5) Four lifephases / ashrma system
- violation often had ~~sy~~ punishments
- no freedom of choice to marry.

The above difficulties in human life led to a reactionary rise of alternate practices like-

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① Buddhism — Siddharta Gautam
- essence of knowledge and attainment of moksha
- access to all castes, even women joined
- preached equality
- disciplined guru-shishya parampara was retained.

② Jainism — Mahavira and Tirthankaras
- gaining Kaivalya gyana and peaceful living
- non-violence and respect to all animals
- women yogis were allowed
  E.g. Swetambaras even belive Tara was female Tirthankara
- discipline like repentance for sins contained.

③ Ajivikas — Makhali Goshala
- they do not belive in existence of soul
- deny attaining knowledge.
- divinity in vachanas & Anubava Mantap
- joined by those against Buddhism & Jainism

The social process of tightening of a religion and rise of sects like above from vedic tradition continues to impact present society as new cults and religions develop.

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**12.** Shed light on the use of symbols and symbolic language by Mahatma Gandhi for both, integrating masses into the National Movement and against social evils. **(250 words) 15**

महात्मा गांधी द्वारा राष्ट्रीय आंदोलन में जनता को लामबद्ध करने हेतु और सामाजिक बुराइयों के विरुद्ध, दोनों के लिए किए गए प्रतीकों और प्रतीकात्मक भाषा के उपयोग पर प्रकाश डालिए।

The entry of Mahatma Gandhi in Indian National Movement in 1920s gave a new vigour to it through novel symbolisms like truth and non-violence

Use of symbolism by Gandhi to integrate masses —

① Glorified the role of women and wives - the image of non-violence encouraged families to women participate - unionism in National council of women, presidency of Sarojini Naidu on INC session.

② Use of "Harijan" - scheduled castes as children of god - increased their respect for Gandhi - earlier remained detached from society.

③ Name of Non-cooperation movement 1919

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was also Khilafat - attract muslims in large numbers and work on Hindu-Muslim unity.

(4) Joined workers and mill workers in fields and factories e.g. Champaran 1917, Ahmedabad Mill Strike 1918 — gave the symbolic language of an approachable leader

(5) use of salt central to civil disobidience movement 1929 daily use of an average citizen - highlighted it as satyagraha of the poor

Gandhi also used his symbolism against social evils -

(1) Started Harijan Sevak Sangh - his work displayed SCs as brothers & friends and organisations are for their help. - 1926.

(2) promoted education of women - Nari Shakti

(3) education of children was for body, mind and soul - developed "Nai Talim".

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(4) Efforts to revive cottage industries in rural areas through cooperation - which were called myriad of social evils by 'BRAmbedkar' — Gandhi called for 'Gramraj'.

(5) Groomed muslim leaders to lead by example - as brotherhood in Indian National congress E.g. Ali Brothers, Khan Abdul Gaffar Khan etc.

(6) Built Ashramas e.g. Sabarmati - for constructive work - like swachata, "Cleanliness is next to Godliness".

(7) challenged British cunningness - gave the message of using "truth" for the youth.

The symbolic Gandhian politics are heart of the Indian National Movement that inspired leaders world over like Nelson Mandela.

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**13.** Giving a brief overview of the three Carnatic Wars, discuss the factors that led to the success of the British against the French in the struggle for control over India. **(250 words) 15**

तीन कर्नाटक युद्धों का संक्षिप्त विवरण देते हुए, उन कारकों पर चर्चा कीजिए जिनके कारण भारत पर नियंत्रण के लिए संघर्ष में फ्रांसीसियों के विरुद्ध अंग्रेजों को सफलता प्राप्त हुई।

The three carnatic wars between 1740s and 1760s ~~are~~ were the deterministic events establishing British rule in India subcontinent by subsiding the French forces.

1st carnatic war

① overtone of the austrian wars of succession
② Treaty of Aix-la-Chapelle
③ ~~led~~ French forces led by Dupleix.
④ British got Madras and French got canadian region in North America

2nd carnatic war

① high interference in affairs of local kings in India.

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(2) Success of British diplomacy under Robert Clive

(3) Treaty of Pondicherry signed

(4) Dupleix was recalled due to huge losses

3rd carnatic war.

(1) overtones of Seven Years War in Europe

(2) British est rule clearly established

(3) French forces lost at Battle of Wandiwash

(4) Treaty of Peace of Paris signed in 1763 ending conflict.

Factors leading to the success of British forces -

(1) Far fetched diplomacy - liaisoning with local kings at Madras, Mysore, Pondicherry.

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(2) Flexible regime of East India company where as French rulers heavily controlled Indian situation by centralised command at home

(3) superior British naval power.

(4) able and efficient leaders like Clive.

(5) British were less concerned about religion, French had high affiliation to missionaries work.

(6) Rise of industrialisation and banking in Britain - gave them an economic and financial leverage over France.

(7) British arrived in India since 1602 - good relations with Mughal empire. (France - 1664).

The strengths and achievements of British in carnatic war was in fact an exemplary base for their India rule from 1773 to crown rule in 1858 to cabinet Mission in 1936.

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**14.** Provide an account of the issues that led to a crisis in Punjab in the 1980s. Also, discuss the roadmap to peace that was eventually adopted.
**(250 words) 15**

1980 के दशक में पंजाब में संकट उत्पन्न करने वाले मुद्दों का विवरण प्रस्तुत कीजिए। साथ ही, शांति स्थापना की उस रूपरेखा पर चर्चा कीजिए जिसे अंततः अपनाया गया था।

The crisis in Punjab in 1980s was an event of ethnic-sub-nationalism resulting in secessionism and terrorism under the Khalistan Movement in 1980s.

Issues leading to Punjab crisis were

(A) Socio-cultural -

(1) Adaption of western practices - threat to identity of Sikhs E.g. Dressing

(2) Revivalist fundamentalism led by Sant Bhindarawale - criticising the "Fallen Sikhs" - who shave their beard

(3) Aspiration of a separate contra-accultarative nation state for Sikhs

(B) Economic and Political -

(1) Green Revolution and high

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development - rise in income - rise in aspirations of separate state Khalistan.

(2) support of political leaders and capturing religious vote bank with regional parties like Akali Dal.

(3) Demand for autonomy ~~rise in~~ - inspiration from rise in independant states based on ethnicity in Africa and Eastern europe.

The Punjab crisis was addressed by Indian government with a two fold strategy -

(1) Use of police and military power - especially to curb terror funding and money laundering.

(2) Increasing decentralisation and autonomy to states - higher funds for education and employment - to reduce indoctrination of youth

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Roadmap to peace eventually adopted includes -

(1) Financial commission devolution of funds - progressively increases

(2) Strengthening local democracy
- participatory governance
- 73rd and 74th constitutional amendments in 1992 - setting up panchayati Raj Institutions and urban local bodies.

(3) Adoption of LPG reforms in 1991
- employment generation, making private businesses easier.

(4) setting up National Education policy 1986 and higher education institutions.

The learnings of Punjab crisis has helped India grow as the world's largest democracy building New India @75 this year.

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**15.** Give a brief account of the distribution of installed capacity of solar power in India. Highlighting the challenges in proper utilisation of solar energy, mention the steps taken by the government to promote it in India. **(250words) 15**

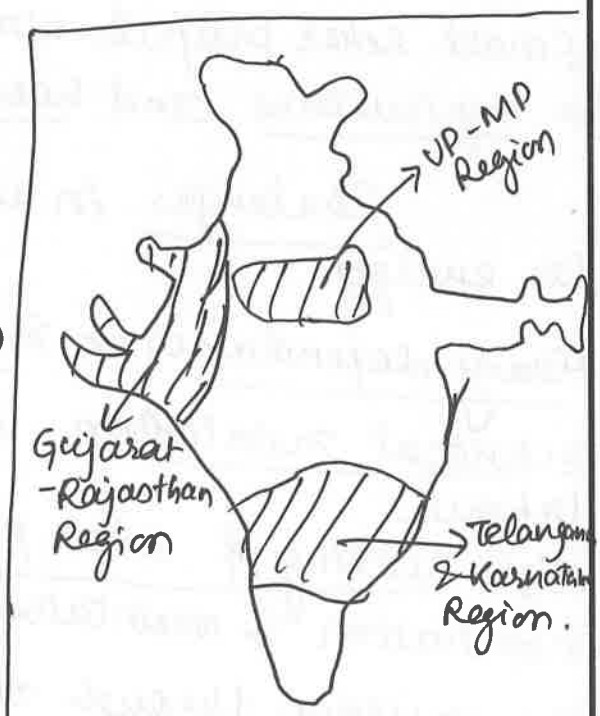
भारत में सौर ऊर्जा की संस्थापित क्षमता के वितरण का संक्षिप्त विवरण दीजिए। सौर ऊर्जा के उचित उपयोग में विद्यमान चुनौतियों को रेखांकित करते हुए, भारत में इसे बढ़ावा देने के लिए सरकार द्वारा उठाए गए कदमों का उल्लेख कीजिए।

Solar power accounts for about 40% of installed renewable energy capacity in India that recently surpassed energy from hydelpower (38%).

Distribution of solar power capacity in India

(1) High concentration in Gujarat-Rajasthan
- Tropic of Cancer Region

(2) Development in Madhya Pradesh Malwa Region.




E.g. Major solar power centres in India.

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(3) Largest floating solar power plant - Omkareswar in Madhya Pradesh

(4) Telangana - Karnataka region - high technology upgradation on solar energy - research on solar chips - Technology hub presence

(5) Largest solar park - Pavagada in Karnataka.

(6) Small solar projects across India for agriculture and housing

Challenges in utilisation of solar energy

(1) Heavy dependance on imports for chips

(2) Technical installation - low skilled labour

(3) High heating of solar plant - upfront installation & maintainenance cost high

(4) Transmission through traditional channels - leading to losses.

Steps taken by government to promote -

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① Ambitious INDCs under Panchamrita principles - increase renewable capacity to 500GW - around 280GW from solar

② subsidies in solarchips production and research under PLI scheme.

③ Solar Mitras - skilling of youth for installation

④ PM KUSUM - solar power pumps for irrigation.

⑤ Adoption of solar powered buildings, office spaces, technology and entertainment parks.

⑥ Ranking of states by MNRE and Niti Aayog - SARAL INDEX - competitive federalism.

Solar power holds the key to addressing India's energy needs which is 4th highest in world and building Atma Nirbhar Bharat.

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16. Post-drift theories based on ocean floor mapping provided new dimensions to the study of distribution of oceans and continents. Elaborate.

**(250 words) 15**

महासागरीय-अधस्तल के मानचित्रण पर आधारित उत्तरवर्ती प्रवाह सिद्धांत ने महासागरों और महाद्वीपों के वितरण के अध्ययन को नए आयाम प्रदान किए हैं। सविस्तार वर्णन कीजिए।

Ocean floor mapping theories were proposed based on movement of tectonic plates under the effect of underlying convections of molten magma.

Formation of ocean and ~~contributions~~ continents and their distribution

(A) Converging plate boundaries

(1) ocean - ocean plates - results in island arc

E.g. Hawaii - USA

Kuril islands - Russia, Aleutian Islands - extending Alaska.

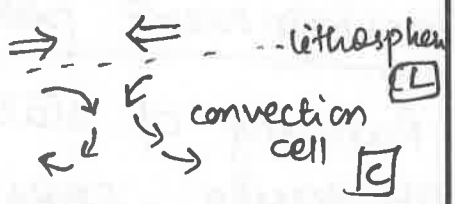


Fig: converging plates.

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(2) Ocean-continent plate boundaries
- results in formation of volcanic fold mountains e.g. Rockies in USA, Atlas mountains in Africa, Andes Range - South America.

(3) Continent-continent plate boundaries
- formation of non-volcanic fold mountains - but highly prone to earthquake due to tectonic activity
e.g. Himalayas of Indian subcontinent, Urals separating Eastern Europe and Russia, Alps joining Italy to western Europe.

(4) Presence of trenches at subsiding point - feature of ~~diverging~~ converging plates - e.g. Diamantina Trench in Indian Ocean, Aleutian Trench

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in North Pacific Ocean etc.

(B) Diverging plate boundaries

- Formation of mid-oceanic ridges and rift valleies
- later develops to nascent sea and leading to ocean

E.g. Great African Rift valley

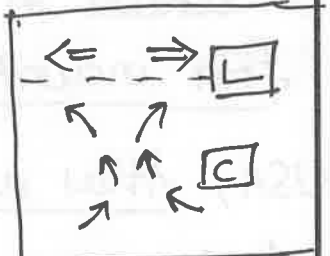


Fig: Diverging plate tectonic.

(C) Transform boundaries

- can lead to separation of landmass
- faulting & quaking activity

E.g. San Andreas Fault - USA

Fig: Transverse sliding of plates

Thus, past drift theories threw light on distribution of oceans and continents, necessary to understand local weather patterns and global climate

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**17.** Explain the phenomenon of heat waves. Also, enumerate the conditions favourable for the development of heat waves in India and their associated health impacts. **(250 words) 15**

हीट वेव्स की परिघटना की व्याख्या कीजिए। साथ ही, भारत में हीट वेव्स के विकास के लिए अनुकूल परिस्थितियों और उनसे संबद्ध स्वास्थ्य प्रभावों को सूचीबद्ध कीजिए।

Heat waves refer to the high increase in temperature concentrated in specific regions for high periods and unpredicted intervals of time

e.g. urban heat waves in Delhi, Chennai.

Causes of Heat waves -

(A) Natural - Geological

(1) Plateau and upland regions e.g. Rayalseema, Sharwas experience frequent heatwaves

(2) water stress and drought prone zones with low precipitation e.g. Rajasthan - Jaisalmer desert

(3) Indian side of Himalayan region acts as shield against rain-bearing

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Mediterrean winds

(4) Breaks in monsoon - increases temperature called October Heat may result in cyclones.

(B) Anthropogenic causes

(1) Green house gases emissions increasing - agriculture, industry

(2) Air conditioning in urban areas - release of heat from compressors
E.g. Delhi, Mumbai

(3) Burgeoning software industry and heating of computing systems
E.g. Bangalore, Hyderabad

(4) Unregulated mining industry - earthquake prone regions - may emit gases causing heatwaves.

Associated health impacts of

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heatwaves –

(1) Loss of life – during high insolation periods – from sunstroke, excessive perspiration.

(2) Risk of nutritive deficiencies – threat to already acute state of malnutrition in India – due to frequently changing heat weather conditions.

(3) weakening of lungs and heart – high risk of non-communicable diseases like hypertension.

(4) Aggravating Black lung, Brown lung disease – mining, construction & industrial labourers.

(5) Threat to indigenous vegetation – diseases from altering food chain and undernutrition

Heatwaves posess threats of risking communities to poverty & health crisis. Proper implementation of NDMA guidelines and SENDAI framework is a must.

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**18.** Providing an account of distribution of rainforests across the world, mention their key characteristics. Also highlight the threats that are being faced by tropical rainforests. **(250 words) 15**

विश्व भर में वर्षावनों के वितरण का विवरण प्रस्तुत करते हुए, उनकी प्रमुख विशेषताओं का उल्लेख कीजिए। साथ ही, उष्णकटिबंधीय वर्षावनों द्वारा सामना किए जा रहे खतरों को भी रेखांकित कीजिए।

Rainforests are the type of ecosystem that habitate evergreen vegetation and fall under hottest biodiversity hotspots.

E.g. Yasuni National Park in Ecuador, Amazon Rainforest in Brazil, North eastern forests in India, South East Asian like Indonesia

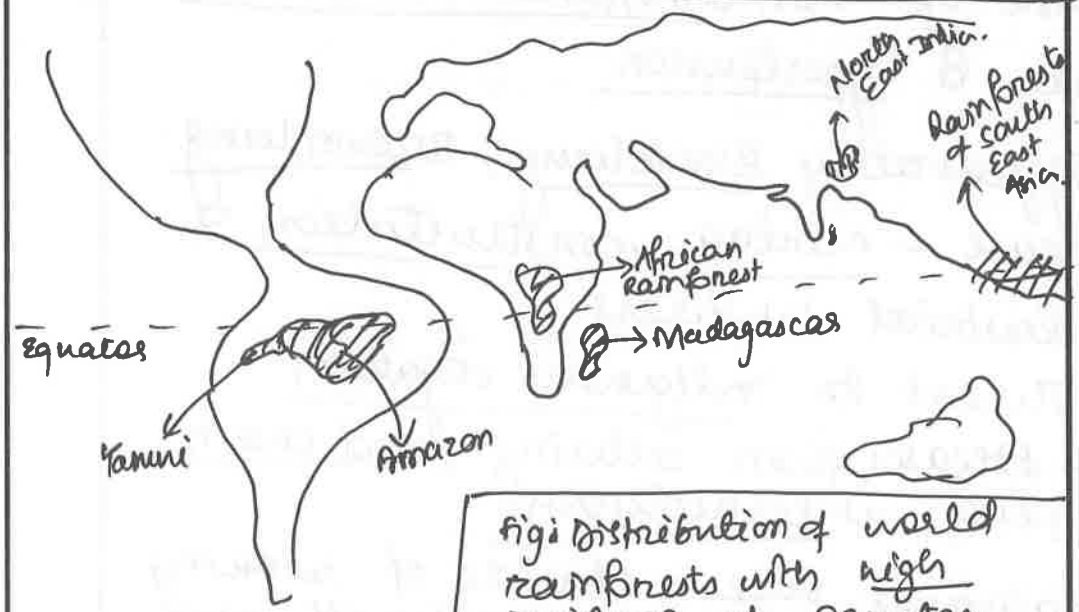


Fig: Distribution of world rainforests with high incidence at equator

Key characteristics of the

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rainforests are –

(1) Presence of epiphytes – vegetation over vegetation forming large canopies.

(2) shedding occurs throughout the year with no prominent periods – making them evergreen – but hardwood (not for lumbering).

(3) Rich biodiversity. e.g. langurs, mammals, Rubber, cocoa etc.

(4) source of minerals ~~like~~ like gold in Amazon river.

(5) climate – ~~rain~~ precipitation throughout the year – convectional rainfall.

(6) high prevalance of diseases due to presence of insects – mosquitoes, flies

(7) shifting cultivation by tribes e.g. Malaysia

Threats faced by tropical rainforests –

(1) High exploitation of resources e.g. Rubber, cocoa, pineapple in Brazil and Africa.

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② Clearing of Yasuni National Park
- industrialisation.

③ Deforestration in Malaysia, Indonesia
- for oil palm plantations.

④ Hunting of animals by local tribes

⑤ Threat to habitat for biodiversity and fauna.

⑥ Extreme events of heat & cold with flooding - facilitated by global warming
- high risk of forest fires and disasters.

⑦ Release of industrial effluents
- pollution in rainforests.

⑧ Disease prevalance in tribes - threat to their existence.

Rainforests like Amazon are the lungs of earth. Hence addressing their threats and preservation is a part of conventions like CBD and UNFCCC.

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**19.** Indian cities are not only mimicking the social and cultural structures of inequality and exclusion found in rural areas but are also creating fault lines for future conflicts. Discuss. **(250 words) 15**

भारतीय शहर न केवल ग्रामीण क्षेत्रों में पाई जाने वाली असमानता और बहिष्करण की सामाजिक और सांस्कृतिक संरचनाओं की नकल कर रहे हैं, बल्कि भविष्य के संघर्षों के लिए दोषपूर्ण स्थिति का भी निर्माण कर रहे हैं। विवेचना कीजिए।

As per census 2011, 30% of Indian population was urban which is predicted to rise to 40% by 2030.

With significant urbanisation, the fallouts of urbanism also requires wide discussion.

- Rise of cities in India → due to employment & business opportunities → urban dwellers are the rural migrants

The above processes ~~of~~ results in similar unequal & exclusionary structures of villages —

(i) Habitat segregation – Rise in gated societies dominated by upper castes and slums with scheduled (SC) caste majority

→ similar to outcasting & periphery living of (SCs) in rural areas.

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(2) extension of kinship, contact and recommendation - based hiring in industries

→ like caste-based jajmani system of occupation.

(3) rise of online marriage match-making that restrict caste, religion, ethnicity.

E.g. vaishyamatrimony.com, tamilshaadi.com

→ continuity in caste endogamy and village exogamy, through khap panchayat.

(4) secular practices mostly matter in urban employment - dwellers continue all caste based rituals at home.

E.g. puja, denial of same utensils to low caste friends etc.

(5) myriad of vote-bank politics - urban politics largely influenced by caste-based considerations E.g. UP, Bihar

→ often lead to riots like lynching & honour killing as punishments in villages.

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Above continuity causes new future conflicts like –

① strengthening of identity - ethnic nationalism leading to secessionism
E.g. Khalistan movement rose in Amritsar city.

② communalisation – leading to indoctrination and terrorism in cities
E.g. Mumbai blasts 1990s, North East Delhi Riots 2020.

③ unscientific residential systems – disasters, problems of waste and health issues in slums.

**Solutions to urban issues**

- Strengthening local politics
  E.g. Funds to urban local bodies
- women empowerement.
- proper education, health & living facilities to urban poor
  E.g. JAGA mission Odisha

Due to rising importance of urban centres in national development, their social structural changes are essential to achieve sustainable Goal No 11.

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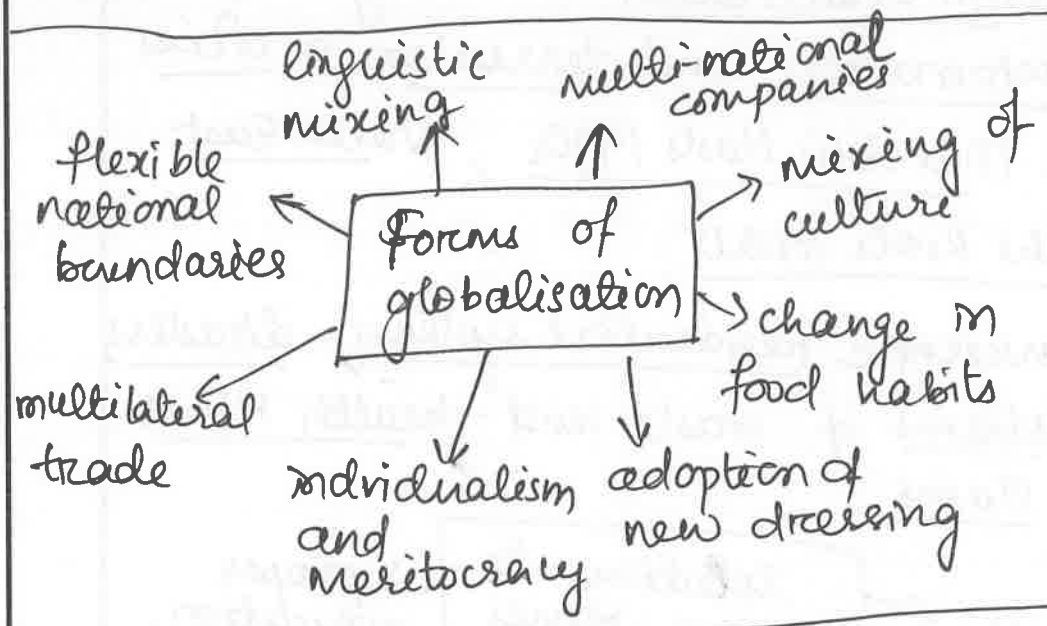
**20.** Examine the multi-dimensional impact of globalisation on tribal development in India. **(250 words) 15**
भारत में जनजातीय विकास पर वैश्वीकरण के बहुआयामी प्रभाव का परीक्षण कीजिए।

Globalisation refers to the increasing interactions, interconnectedness and multilateral trade among nation states across the world.




Positive impact of globalisation on tribal society -

(1) coming of democratic process
- participation in governance
- rising equality.

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(2) gain employment - service sector companies - rise of gig economy

(3) adoption of modern lifestyle - better standard of living

(4) nutritious food habits - organic cultivation - addresses malnutrition.

Negative Impacts

(1) Threat to identity - acculturation and assimilation - backlash in form of militancy in North East E.g. Assam, Nagas in Nagaland.

(2) Loss of land and traditional practices - spiritual alienation from nature worship, displacement - naxalism

E.g. Sukhdeo Thorat committee estimated 85 lakh tribals displaced for development since 1990s but only

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25% rehabilitated.

(3) shyness in PVTGs - unable to adopt modernity - results in marginalisation ~~illi~~ - literacy is still low at 57%.

(4) adoption of alcoholism, drug peddling - from golden crescent and golden triangle - 80% tribal men are alcoholics

(5) fluid borders - trafficking and arm smuggling to Myanmar, China.

(6) clash with general society - without ~~adopt~~ getting proper immunity - dwindling population E.g. Sentinelese, Nicobarese.

Tribes have unique culture contributing to Indian diversity, it is important for their empowerment based on Xaxa committee report like MSP on forest produce, reservation in education & jobs etc.

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## GENERAL STUDIES (TEST CODE : 2213)

| | | | |
|---|---|---|---|
| Name of Candidate | KASTURI PANDA | | |
| Medium Eng./Hindi | ENGLISH | Registration Number | 721089 |
| Center | ONLINE | Date | 30-07 |

### INDEX TABLE

| Q. No. | Maximum Marks | Marks Obtained |
|---|---|---|
| 1 | 10 | |
| 2 | 10 | |
| 3 | 10 | |
| 4 | 10 | |
| 5 | 10 | |
| 6 | 10 | |
| 7 | 10 | |
| 8 | 10 | |
| 9 | 10 | |
| 10 | 10 | |
| 11 | 15 | |
| 12 | 15 | |
| 13 | 15 | |
| 14 | 15 | |
| 15 | 15 | |
| 16 | 15 | |
| 17 | 15 | |
| 18 | 15 | |
| 19 | 15 | |
| 20 | 15 | |

**Total Marks Obtained:**

**Remarks:**

### INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
   उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न–पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI**
   इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
   सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
   प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other that the authorized one.
   प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न–सह–उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
   प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
   उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

16-B, 2nd Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar Delhi- 110009

# EVALUATION INDICATORS

1. **Contextual Competence**
2. **Content Competence**
3. **Language Competence**
4. **Introduction Competence**
5. **Structure - Presentation Competence**
6. **Conclusion Competence**

**Overall Macro Comments / feedback / suggestions on Answer Booklet:**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**All the Best**

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(इस भाग में कुछ ना लिखें)

1. An effective approach to green budgeting is underpinned by strong strategic framework, tools for evidence generation and an enabling budgetary governance framework. Discuss. **(150 words) 10**

हरित बजट के लिए एक प्रभावी दृष्टिकोण को सुदृढ़ रणनीतिक ढांचे, साक्ष्य निर्माण हेतु उपकरण और एक सक्षम बजटीय शासन ढांचे द्वारा सुदृढ़ता प्रदान की जाती है। विवेचना कीजिए।

Green budgeting refers to the exercise of accounting for social and environmental externalities in the annual receipts and expenditures of budget.

Strategic Framework ← Effective approach of green budgeting → Tools for assesment

↓

Enabling governance.

**Strategic Framework for Green Budgeting**

① Waste disposal and treatment

E.g. Fly Ash Utilisation Policy for coal sector

② Penalty taxes on demerit goods

E.g. Higher duties on petroleum - 5% extra cess on unblended petrol, highest - 18% GST on tobacco.

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③ Renewable Purchasing certificates and obligations - coupled with incentives to fuel cells under PLI scheme.

Tools for assessment

① Setting targets E.g. Reducing carbon emissions by 40-45% compared to 2005.

② PARIVESH Portal - colour coding polluting and non-polluting industries by MoEFCC.

Governance - Enabling Framework

① International cooperation on green energy, electric vehicles E.g. USAID, Japan, Australia EPCA etc.

② Ease of Doing Business - labour code, Global Minimum Tax, CPACE for startups

Better environmental outcomes are part of basic human rights and base necessities for Swasth Bharat using green budgeting.

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**2.** State the need for circular economy in India and the challenges associated with it. Also, discuss the measures that are required to build a circular economy in India. **(150 words) 10**

भारत में चक्रीय अर्थव्यवस्था की आवश्यकता और इससे जुड़ी चुनौतियों का उल्लेख कीजिए। साथ ही, भारत में एक चक्रीय अर्थव्यवस्था के निर्माण के लिए आवश्यक उपायों पर चर्चा कीजिए।

Circular economy refers to a process of production and consumption where in goods are used to their optimum levels within requirement limits and then repurposed to reduce waste.

Need for circular economy in India

① NITI Aayog estimate - 62MT of waste produced in a day - less than 50% treated.

② Air and water pollution - 21/30 most polluted cities in India (IQAir), 70% ground water - unfit for consumption.

③ Lifestyle diseases - ~~than~~ cause of 65% premature deaths - due to unhealthy surrounding and food chain eutrophication

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(इस भाग में कुछ ना लिखें)

## Challenges of circular economy in India

- High use of plastics - non biodegradable consumptions dominate → Environment and biodiversity threat
- Emerging Technology - E waste
- Risk of health - waste segregators
- Rising population - demand increasing
- Lack of research and development in recycling industry

## Measures to build circular economy

1. Facilitating regulatory framework
   E.g. Vehicle scrappage policy - automobiles.
2. Startup India E.g. Ecokaari makes bags from chips packets, Neemans shoes from single use water bottles
3. Higher allocation to research - Food preservation techniques
4. Use of fly ash - construction - artificial bricks.
5. Producer Responsibility - Bulbs, electronic appliances.

Circular economy is an essentiality in India as it holds the key to Atma Nirbhar Bharat with lifestyle resilience.

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**3.** The Major Port Authorities Act, 2021, seeks to grant greater autonomy and flexibility to the major ports and professionalise their governance. Discuss. **(150 words) 10**

प्रमुख बंदरगाह प्राधिकरण अधिनियम, 2021, प्रमुख बंदरगाहों को अधिक स्वायत्तता और लचीलापन प्रदान करने तथा उनके शासन को पेशेवर बनाने का प्रयास करता है। विवेचना कीजिए।

The Major Port Authorities Act 2021 has been enacted to improve functioning of the 12 major container ports in India that manage about 80% of international freight.

Providing greater autonomy leading to professionalism in governance of ports

① Faster clearance of shipments - which is among highest delays for India compared to Japan, China, Singapore, USA - Economic survey 2021

② Introduction of new technologies
- flexibility in decision-making and innovation like startups

③ Improvise corporate governance
- reduce bureaucratic hassles and corruption.

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(4) Reduce political interferences
- autonomy in process-upgradation

(5) Adopt world's best practices
- especially important for strategic ports like Mumbai, Haldia, Mangalore, Tuticorin, chennai, Paradip
- world recognition

(6) Boost to exports - 1 trillion USD by 2030

Challenges

(1) Inertia from traditional leadership
- bureaucratic job security reducing.

(2) Backlash from trade unions.

(3) Allegation of more powers given to central government.

(4) Automation may lead to job loss
- manual labour unemployment

(6) Poor incentives to importers

The Major Ports professionalising by the act is along the larger agenda of minimum government, maximum governance.

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(इस भाग में कुछ ना लिखें)

**4.** Analyse the need for shifting from presumptive land titling to conclusive land titling system in India. Also, highlight the hurdles in its implementation. **(150 words) 10**

भारत में अनुमानित भूमि स्वामित्व से निर्णायक भूमि स्वामित्व प्रणाली में स्थानांतरण की आवश्यकता का विश्लेषण कीजिए। साथ ही, इसके क्रियान्वयन में आने वाली बाधाओं को रेखांकित कीजिए।

Presumptive Land Titling is the process of assigning land parcels based on historical occupancy and transactions.

conclusive Land Titling system, instead relies on alotting land titles by land records data.

Need to shift from presumptive to conclusive land titling —

1. Reduce title disputes - land record modernisation
2. Fastes clearance of judicial pendancy related to land
3. Spurs economic activities - agriculture, industry, office spaces.
4. Ensure better rehabilitation and easier compensation process.
5. Release degrading land from disputes - essential for land reclamation.

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⑥ Land Monetisation - by government - revenue generation

Hurdles in implementation

① Absence of evidences - lack of records to assign titles

② Diversion of agriculture lands to homestead/industries - during land reforms.

③ Casteism and dominant groups - involved in land grabs - marginalised groups like Dalit, Tribals denied land titles.

④ Encroachments and unauthorised habitations in government lands E.g. Slums in cities, Nearby railway tracks etc.

⑤ Women hold less than 5% of ownership rights.

⑥ Appeals - No reduction in judicial cases

An efficient conclusive land titling process has been suggested by NITI Ayog for Sabka saath Sabka vikas in sector of land as the most deficient natural resource.

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**5.** What do you understand by methanol economy? Critically discuss its role in achieving India's energy security and economic prosperity. **(150 words) 10**

मेथनॉल अर्थव्यवस्था से आप क्या समझते हैं? भारत की ऊर्जा सुरक्षा और आर्थिक समृद्धि प्राप्त करने में इसकी भूमिका की समालोचनात्मक विवेचना कीजिए।

Methanol economy refers to all primary, secondary and tertiary sectors of economic activities functioning on methanol-energy power systems.

**Role in achieving India's energy security**

(1) Reverse the future crisis - India to grow as ~~[illegible]~~ to 3rd largest energy consumer by 2030 - as per International energy Agency (currently 3rd).

(2) Lowering import dependance.

(3) Increased reliance on clean energy - no harmful emissions on methanol burning

**Role in economic prosperity**

(1) As per UNDP - India requires 18% more per-capita energy consumption for 8% rise in Human development

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(इस भाग में कुछ ना लिखें)

Index

(2) Industrial Revolution 4.0 - methanol dependance - reduce emissions and lower pollution - lower expenditure on waste management

(3) Hybrid/Electric Mobility - As per NITI Aayog - 15% methal blending can reduce sulphur and nitrogen emissions by 35-40%.

(4) Less inflammable - less disasters (industrial)

Challenges to methanol economy

(1) Poorer energy density than petrol and diesel - lower mileage - reduces life of automobiles.

(2) Nascent research stage - difficulties in transport and storage - requires low temperature and pressure.

(3) Reducing ~~energy~~ technology transfers from developed nations - geopolitical tension

methanol economy can help in achieving SDG Goal No 7 - efficient energy systems in India with better standards of living and higher GDP

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(इस भाग में कुछ ना लिखें)

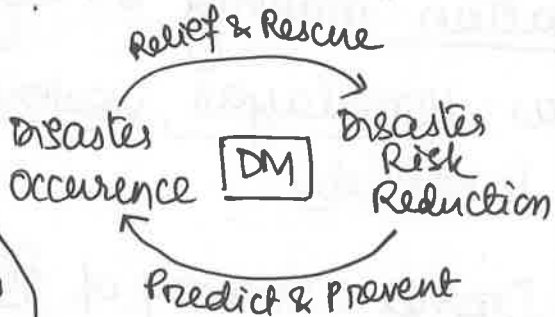
**6.** Discuss the role of geospatial technologies in developing effective approaches for disaster risk reduction and disaster management.

**(150 words) 10**

आपदा जोखिम न्यूनीकरण और आपदा प्रबंधन के लिए प्रभावी दृष्टिकोण विकसित करने में भू-स्थानिक प्रौद्योगिकियों की भूमिका की विवेचना कीजिए।

Disaster Risk Reduction is the exercise of predecling, mitigating and reducing the effects of a disaster.

It is a part of disaster management (DM) strategy both before and after occurence.




Role of geo-spatial technologies in approaches

① GPS tracking systems - with ISRO's NAVIC - tracing life and property at risk

② ISRO Bhuvan App - land identification and assess vulnerability.

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③ Assessing Luminous intensity (Economic Survey 2022) – identify high risk hotspots E.g. High population density – more lighting – Greater chance of electricity faults and circuiting during cyclones.

④ Resource imaging satellites – disaster zonation mapping in high altitude areas – Himalayas, western Ghats – prone to landslides.

⑤ Drones – survey of flood, drought sights – useful in transportation of relief material – in remote areas.

⑥ weather modeling based on geography – disaster intelligence prediction

Geospatial Technologies coupled with SENDAI framework and adhering to NDMA guidelines can assist better disaster management.

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**7.** The focus of Environmental Impact Assessment (EIA) needs to shift from utilization and exploitation of natural resources to conservation of natural resources. Discuss. **(150 words) 10**

पर्यावरणीय प्रभाव आकलन (EIA) का मुख्य ध्यान प्राकृतिक संसाधनों के उपयोग और दोहन से हटाकर प्राकृतिक संसाधनों के संरक्षण पर केंद्रित होना चाहिए। विवेचना कीजिए।

Environment Impact Assessment (EIA) is a detailed study undertaken to assess the effects of developmental projects on the environment.

Importance of EIAs to conserve natural resources

① Development leading to large-scale displacements. E.g. Saxena committee report - 85 lakh STs displaced post 1991 industrialisation - but only 25% rehabilitated

② Threat to biodiversity of region
E.g. Narmada Bachao Andolan - Fresh water crocodiles
Save Silent Valley Movement - lion Tailed macque in western Ghats

③ Large scale deforestration - tarey forests for metro

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(4) Loss of forest produce, depletion of minerals E.g. Singhbhum, Panchamatpalli
- also air pollution from mining

However, recent amendments of EIA Act 2006 as aimed at utilisation of natural resources more -

(1) Coal Exploration allowances
- without use of District Mineral Funds

(2) Liberal hydrocarbon exploration - $CO_2$ emission

(3) Leverage of Neutrino Observatory
- despite proximity to TN Bird reserve

(4) Construction of Dams like Hirakud
- curb natural river flow - flooding.

(5) POCSO issue 2015 - Niyamgiri hills coal mining - Dongria Kondh revolts.

The environment impact assessment must ensure a balance of development over exploitation of natural resources to abide by DPSP Art 48 - protect forests and wildlife.

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**8.** What do you understand by hybrid warfare? Discuss India's preparedness in this context. **(150 words) 10**

हाइब्रिड वारफेयर से आप क्या समझते हैं? इस संदर्भ में, भारत की तैयारियों की विवेचना कीजिए।

Hybrid warfare is a technique of using both physical and virtual methods to advance wars.

E.g. Russia intercepting Ukraine government records along with using of missiles in the 2022 conflict.

Preparedness of India to hybrid warfare

① Defence system - upgradation of armed forces - intelligence by National Investigation Agency coupled with Integrated Theatre commands.

② Financial intelligence gathering - by FIU in Ministry of Finance.

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③ Use of digital technologies
- Cyberdome in Kerala

④ International cooperation with Financial Action Task Force, BRICS Anti-Terror Structure.

⑤ Cyber Infrastructure like CSR, Strategic protection of high value targets like marine vessels, ports, nuclear plants.

⑥ IOT - intercepting measures and Drone Rules 2021.

⑦ Research of 5G - faster communication
- cooperation at level of D10

⑧ Public-Private Partnership - Defence procurement
India has aligned with Jeevan Reddy and Shekatkar committee recommendation of improving defence through indigenisation to tackle risks of hybrid warfare.

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**9.** Discuss the challenges associated with inclusion of women in armed forces, particularly in combat roles in India. How can these challenges be addressed? **(150 words) 10**

सशस्त्र बलों, विशेष रूप से भारत में युद्धक भूमिकाओं में महिलाओं को शामिल करने से संबंधित चुनौतियों पर चर्चा कीजिए। इन चुनौतियों का समाधान कैसे किया जा सकता है?

The Babita Punia judgement by honorable Supreme court has enabled inclusion of women in permanent comission in Indian army recently.

Women in Indian Army historically
- less than 10% of forces
- temporary roles
- highly patriarchial training regime
- glass ceiling

Challenges with inclusion of women in combat roles of armed forces

① Traditionalism in the army structure
- SC identified gender biased recruitment process.

② Recognised as women-unfriendly workplace - presence in minority with poor enabling hygiene

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(3) Patriarchal training process - modules devised keeping in mind - physical masculinity.

(4) Age of professional growth is the child bearing period for women - 25 to 35 yrs - career breaks - loss of promotions

(5) Social perception - women unfit for physical endurance.

Addressing the challenges

(1) Gender inclusive recruitment and training modules

(2) Empathy and sensitization of male collegues.

(3) Healthy workplace - inclusion of POSH guidelines.

(4) Maternity benefit and creche facilities for women in army.

(5) Paternity leave - changing social biasness as men and women different.

Inclusion of women in combat roles will help in diversifying our armed forces and achieving SDG Goal No 5.

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**10.** S. Chandrasekhar was one of the greatest scientists of the 20th century whose prolific contributions spanned across astrophysics, space and mathematics. Elaborate. **(150 words) 10**

एस. चंद्रशेखर 20वीं सदी के महानतम वैज्ञानिकों में से एक थे, जिनका खगोल भौतिकी (एस्ट्रोफिजिक्स), अंतरिक्ष और गणित के क्षेत्र में विपुल योगदान था। सविस्तार वर्णन कीजिए।

S Chandrasekhar was an Indian mathematician and astrophysicist who received the Nobel Prize for his ground-breaking work in study of black holes and decay of stars.

Concept of Chandrasekhar limit

(1) Star lower mass than size of sun - Brown star

(2) Sun - gradual decay of $H_2$ and He and reduction of fusion process.
- but it will not become black hole.

(3) less than 1044 times mass of sun
- Chadrasekhar limit - Red star

(4) Beyond Chandrasekhar limit → Red

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Giant stars → White Dwarf

(5) only stars size/mass greater than 3 times sun becomes black hole

E.g. Ultima Thule, Sagittarius A*

Contributions

(1) Insights into rise of universe

(2) Potential of sun to hold the solar system

(3) Possibility of black holes nearby Milky way

(4) Efficient utilisation of energy from stars

(5) make predictions of future of universe

S Chandrasekhar was thus greatest scientists of 20th century and India needs more like him by creating enabling environment for more Nobel winners.

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**11.** State finances in India present a worrying picture, with debt sustainability being a major concern. Discuss in context of the recent RBI report on state finances. **(250 words) 15**

भारत में राज्य वित्त एक चिंताजनक स्थिति प्रस्तुत करता है, जिसमें ऋण संधारणीयता एक प्रमुख चिंता का विषय है। राज्य वित्त पर आर. बी. आई. की हालिया रिपोर्ट के संदर्भ में विवेचना कीजिए।

States in India have combined debt to GDP ratio at 60% while desired level suggested by NK Singh panel is 40%.

Debt sustainability is a major concern for state finances

1. Excessive borrowing with shifting repayment deadlines and evergreening of loans - poor credit ratings.
2. Dependance on devolution - poor self generation of revenue due to local politics.
3. Proximity to regional voters - corporate fundings and vote banks

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- frequent loan write offs.

(4) Opportunistic politics - Reliance on freebies culture - high expenditure but low investment - free electricity by Delhi govt.
E.g. Amma canteens.

(5) Poor data collection and evidence - unrealistic targets leading to scheme failures E.g. Odisha KALIA scheme merged with PM KISAN as 10000 per farmer per year - beyond state capacity.

(6) High corruption and collusion - unholy nexus between fixed politicians and private sector - substandard capital assets and misuse of taxpayers income

Remedies for state finances

(1) Reform linked Fiscal Responsibility

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and Budget Management (FRBM) target – Reduced from 5% to 3% and reversed gradually – based on power sector reforms, implement one Nation one Ration Card, health upgradation.

(2) RBI relaxation on consolidated sinking fund guidelines.

(3) Rewarding best practices E.g. NITI Aayog indices on energy preparedness, drinking water, school education, innovation, healthy states etc.

(4) encouraging participation in central sector schemes – by allowing states to retain publicity E.g. National social assistance Program

(5) International tie ups. E.g. World Bank STARS program for education

(6) special state status – North east.

Sustainable state finances are a major part of our road to Azadi Ka Amrit Kal @ 100 years of independence.

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**12.** The Indian experience provides several lessons of an inclusive digital economy model that enables formal digital governance structure at a low cost and with easier access. Discuss. **(250 words) 15**

भारतीय अनुभव एक समावेशी डिजिटल अर्थव्यवस्था मॉडल के कई सबक प्रदान करता है जो कम लागत पर और आसान पहुंच के साथ औपचारिक डिजिटल शासन संरचना को सक्षम बनाता है। विवेचना कीजिए।

Digital Governance is defined by NITI Aayog as inclusion of modern information and communical technologies for better delivery for public services

Low cost digital governance by digital economy & easy access

① mass based internet service provider - PM WANI - wifi at public places.

② Online governance portals through smartphones - jeevanpraman, data.gov.in, all departmental websites.

③ Online Tax Filing - eGST, e Income Tax, Faceless Appeals scheme, Reduce middlemen and tax hassles -

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pre filled forms.

(4) Financial inclusion - PAISA portal for urban subsidies, JAM-DBT for LPG PAHAL, Kisan credit card updates on mKisan app.

(5) social causes - Education - SWAYAM portal
- Health - Telemedicine portal by MEITY
- Skill Training - iGOT for Karmayogi, COVID healthcare training

(6) Monetary Policy Transmission - RBI E-kubera

Challenges to Indian experience of digital economy

(1) Digital divide - Digital illiteracy and low accessibility E.g. NSSO Survey - 48% urban population have access to internet - 15% for rural in 2015.

(2) Individual privacy - data thefts,

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identity manipulation and financial frauds.

(3) Unregulated free speech - challenges to governance - fake news and hate speech - violence, riots, radicalisation E.g. Udaipur blasphemy

(4) Threat to strategic assets for national security E.g. ~~comprise~~ compromise in Mumbai electric grids.

Lessons of inclusive digital economy in India

(1) Poverty alleviation - PM Jan Dhan accounts, women empowerment

(2) Nutritional Tracking - POSHAN portal

(3) COVID resilience - videoconferencing, Mann ki Baat Telecast, ₹500 DBT transfer to poor.

(4) Criminal tracking - CCTNS.

Digital economy is a new backbone for Indian ambition of 5 trillion GDP with inclusive growth and governance

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**13.** Dairying is a viable livelihood option for a large section of the population. In this context, discuss the significance, challenges faced and associated government initiatives for the dairy sector in India. **(250 words) 15**

डेयरी व्यवसाय, आबादी के एक बड़े हिस्से के लिए आजीविका का एक व्यवहार्य विकल्प है। इस संदर्भ में, इसके महत्व, विद्यमान चुनौतियों और भारत में डेयरी क्षेत्र के लिए सरकार द्वारा की गयी पहलों की विवेचना कीजिए।

Animal husbandry contributes 25% of agriculture GDP in India with about 20% ~~of~~ milk production of the world.

Dairying as a livelihood option - Significance

① Employment alternative - NABARD survey predicted 30% loss in farm income due to climate change

② Women empowerment - Self Help Groups E.g. AMUL - in Gujarat - milk federations - employ women majorly.

③ Highest livestock population in India - Diarying is a high potential sector.

④ Fighting malnutrition - milk as an essential nutrient requirement for women and children.

⑤ Feed on pests, insects - produce organic manure.

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## Challenges faced to diary sector

① Lower wages and income - mostly a primary activity in India - with manual labour.

② Milk processing - Butter, curd, Ready-to-eats - contributes less than 10% - poor value addition.

③ Cattle diseases - Foot and mouth Disease, Glanders - sometimes zoonotic - reduces productivity

④ Less research and development on high yielding breeds - less per capita produce

⑤ Livestock - high carbon emissions - cows produce high $CH_4$.

## Government Initiatives

① National Disease control Program - vaccines on cattle diseases.

② Rastriya Gokul Mission - artificial

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insemination, genomics for higher yield

③ Incentives for organic farming
– zero Budget Natural farming and Paramparagat Krishi Vikas – income from cattle dung.

④ Mega Food Parks – Food Processing infrastructure for milk pasteurisation, treatment, marketing, packaging.

⑤ KISAN credit card extended to dairy farmers – with cheaper loans and interest subvention.

⑥ Animal Husbandry Infrastructure Development Fund announced.

⑦ Ministry of cooperation formed
– encourage milk cooperatives

⑧ Small ruminants promotion – integrated farming with dairying.

The article 48A DPSP of Indian constitution directs state to promote animal husbandry including dairying on modern scientific lines.

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**14.** The imperative to increase farmers' income must shift to creating value chains and must not be reliant on the MSP regime and subsidy bias prevalent in the current Indian agricultural system. Examine.

**(250 words) 15**

किसानों की आय बढ़ाने की अनिवार्यता को मूल्य श्रृंखलाओं के सृजन से जोड़ा जाना चाहिए और इसे वर्तमान भारतीय कृषि प्रणाली में प्रचलित एम. एस. पी. व्यवस्था एवं पूर्वाग्रहयुक्त सब्सिडी पर कतई निर्भर नहीं होना चाहिए। परीक्षण कीजिए।

The recent demands from farmer pressure groups for legalisation of MSP regime highlights India's dependance on subsidies rather than value chains for agrarian development.

Reliance on MSP regime and Subsidy Bias - Issues in the systems

① Unscientific agriculture - growth of water-intensive crops like rice in dry regions of Northwest - Punjab, Haryana due to high MSP

② Depletion on ground water - due to free electricity on pumps and tubewell revolution

③ Result of fertiliser subsidy - soil average of NPK is 8:3:1 in India

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while requirement is 4:2:1.
- pollution of soil and groundwater.

(4) Excessive reliance on cropping
- poor diversification of farm income
- crop failures leading farmers suicides.

(5) Race to multiple cycles of same crop
- poor soil health - no time to replenish
- stubble burning - pollution

(6) Assurity on MSP income - moral hazard
- dependancy culture - lack of modernisation and mechanisation

(7) Negligence of pulses, oilseeds - leading to high current account deficit - import

**Necessity to shifting for better value chains**

(1) India achieved 290MT grain production in 2020 - but hardly 10% of it is processed - no value addition - (Arjun Sengupta).

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② In reality MSP benefits only 6% of farmers - MS-Swaminathan committee report.

③ Thrust on agri infrastructure - corpus funds and PSL priority sector lending

④ TOP scheme - Kisan Sampada Yojana for food processing - export promotion (APEDA)

⑤ Clusters based development - saffron in J&K, exotic fruits & flowers in North East (Purple Revolution), tribal products - ONE District One product scheme.

⑥ Rationalising agri-expenditure - umbrella Krishonati Yojana farm mechanisation, horticulture development

⑦ Extension services - Digital training and skill upgradation of farmers E.G. Apiary, Fishing etc. - Blue Revolution, Honey Mission

The traditional rice-wheat dominance has to reduced by creating value chains over MSP regime for doubling farmers income as per Ashok Dalwai comm.

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**15.** What are the challenges in ensuring sustainable river management in urban areas? Highlight the remedial measures that can be taken for river management with a special focus on the recently launched River Cities Alliance. **(250 words) 15**

शहरी क्षेत्रों में संधारणीय नदी प्रबंधन को सुनिश्चित करने में कौन-सी चुनौतियाँ विद्यमान हैं? हाल ही में प्रारंभ रिवर सिटीज एलायंस पर विशेष ध्यान देते हुए नदी प्रबंधन के लिए किए जा सकने वाले उपचारात्मक उपायों को रेखांकित कीजिए।

India is home to 18% world population with only 4% of fresh water resource of which 70% is polluted as per Water Aid Survey.

In the above light, sustainable river management has become essential with rampant urbanisation.

**Challenges to river management in urban areas**

① Unscientific constructions - space deficiency for planned development.

② Diversion of water bodies - lost channels from rives beds.

③ Waste dumping - major rivers like

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Ganga and Yamuna - high dumping from nearby industrial areas like Okha E.g. writes froth in Yamuna.

(4) High sedimentation in wide rivers channels E.g. Brahmaputra - excessive flooding in Assam, Kosi in Bihar.

(5) Neighbouring habitations (housings) and agriculture lands - maintain no minimum distance - encroachments on river beds.

(6) Poor percolation in cement-concrete structures - covering ground water - waste reach to rivers.

**Launch of Rivers cities Alliance**

(1) collaboration between Ministry of Urban & Home Affairs with Jal Shakti Ministry.

(2) Facilitate deliberations on river basin

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management in cities

(2) Sharing of best practices by states

E.g. organic restoration channels in Bangalore.

Remedial measures

(1) Previous treatment of solid and liquid waste under Environment Protection Act.

(2) Natural farming nearby by rivers

E.g. Budget 2022 - upto 5km from Ganga basin.

(3) Watershed management - participation of locals - agroforestry, afforestration

(4) Extension of Eco-Sensitive mapping guidelines to both coastal and non-coastal cities

(5) City Beautification - Creating percolation channels - green parks, restoring reduced water levels

Sustainable water management in cities can be further achieved by Mihir Shah committee recommendation by including the CGWA, CWC and NGBRA.

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**16.** Haphazard growth and poor management make the Indian cities the locus of disasters, both large and small. Comment. Also, discuss the current gaps in policies in addressing these challenges. **(250 words) 15**

अव्यवस्थित विकास तथा निम्न स्तरीय प्रबंधन ने बड़े और छोटे दोनों प्रकार के भारतीय शहरों को आपदाओं का केंद्र बना दिया है। टिप्पणी कीजिए। साथ ही, इन चुनौतियों का समाधान करने में नीतियों में विद्यमान वर्तमान अंतराल पर चर्चा कीजिए।

The urban population in India at 40% in census 2011 is set to rise by 50% by 2030 with about 75% contribution to GDP.

However, post independence urban sprawl in India has been quite haphazard and un-managed

1. Unscientific housing - unplanned lanes, encroachment on roads and natural resources.
2. Rampant afforestration for industrial setups - polluting highscapes.
3. Produce high waste load - untreated
4. Proliferation of slums and crimes.
5. Dilapilated buildings, difficult supply of water and electricity
6. Open defecation - poor sanitation.

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Locus of small and large urban disasters

① Urban flooding due to congestion and no water flow channels in concrete
E.g. Mumbai, Bengaluru, Hyderabad.

② High GHG emissions - industry, automobile
Urban Heat Island - Urban Pollution
Plateau effect in Hyderabad
Black atmosphere in Delhi winters.

③ Centre of Epidemics and high disease load - 70% COVID19 case load in major cities

④ Coastal cities - Havoc of cyclones
E.g. Bhubaneswar, Chennai.

⑤ Epicentre of earthquakes' devastation due to high rise structures and mass housings E.g. Gujarat EQ.

Current gaps in policies

① Lack of data driven policies for

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urbanisation - high population density in few pockets

(2) very flexible implementation of disastes guidelines - highly vulnerable buildings - no disastes mitigation rescues

(3) Lack of manpower and low capacity building of volenteers.

(4) Higher allocation to industrial sprawl - negligence to waste collection activities.

(5) No penalties in deviations

**Policies to address the challenges**

- Set targets of utilising Finance commission Disastes management Devolution Funds
- Power devolution to urban local bodies
- Solar-power driven office and mass housing structures
- Hackathon - Housing Technologies
- strict waste recycling guidelins
- Upgrading courses of global urban Planning

Resilient urban spaces with minimised disastes effects is a vision to be achieved by India under SDG 11.

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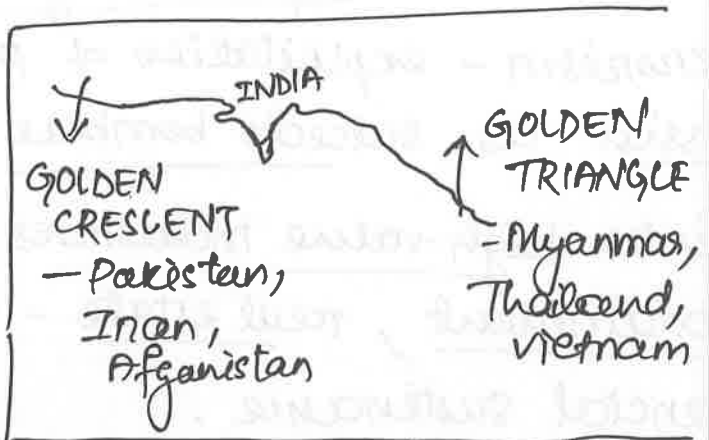
**17.** Discuss the extent of the problem of narco-terrorism in India. What measures have been taken by the government to counter and control this problem? **(250 words) 15**

भारत में नार्को-आतंकवाद की समस्या के प्रसार पर चर्चा कीजिए। इस समस्या से निपटने और नियंत्रित करने के लिए सरकार द्वारा क्या उपाय किए गए हैं?

Narco Terrorism refers to organised terror systems that thrive on business of narcotics and psycholropic substances.

Extent of problem of narco-terrorism in India




E.g. India's proximity to Narco Mafia.

① Neighbours to both Golden crescent - Punjab and Golden Triangle - North East.

② Drug peddling syndicates work along with human trafficking.

③ Promote radicalisation of youth -

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narco abuse facilitates easy recruitment by manipulation through indoctrination

(4) Facilitate arms smuggling E.g. Khalistan movement and secessionism in Nagaland Manipur sector.

(5) Provide over-ground systems of terrorism - exploitation of poor locals - assist as suicide bombers

(6) Enter high-value industries like entertainment, real estate - organised financial sustenance.

Measures taken by government to counter and control

(1) Powers of Narcotics control Bureau

(2) International cooperation - UN convention on Narcotics and Psychotropic substances (NPS).

(3) Passing NPS attack.

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(4) Evidence based random searches in real estate spots, golf courses, cruises etc.

(5) Intelligence gathering - Digital analytics and modernisation of troops for combat

(6) Good governance - impetus on health, nutrition, development, employment in affected areas like HIMAYAT in Jammu Kashmir, inclusion in PM Jan Aarogya. - reduce radicalisation.

Narco terrorism has a potential of pushing households to extreme poverty, with social evils and threat to national security - hence better counter-initiatives by government is essential.

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**18.** The dark web can be an ideal platform for several criminal and terrorist activities. Discuss with examples. Also, suggest measures to tackle the misuse of dark web. **(250 words) 15**

डार्क वेब कई आपराधिक और आतंकवादी गतिविधियों के लिए एक आदर्श मंच हो सकता है। उदाहरण सहित चर्चा कीजिए। साथ ही, डार्क वेब के दुरुपयोग से निपटने के उपायों का सुझाव दीजिए।

Dark web refers to the 10% of network based systems that work devoid of general public knowledge and beyond government regulations in virtual ecosystem.

Platform for criminal and terror activities

① Unauthorised access to cyber physical systems by malwares, Trojan horses to steal data
E.g. Petya, wannacry

② Denial of Access Attacks on government machinery E.g. Hacking railway website.

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③ comprise data records - theft of identity and financial frauds
e.g. Diversion of public savings by fake calling and OTP acquiring.

④ Risk on strategic assets e.g. compromise on Kundankulam Nuclear Plant database

⑤ Spying on celebrities, resource persons, politicians e.g. Pegasus.

⑥ Organised drug peddling, money laundering, extortion softwares, human trafficking with centrally managed computers.

Measures to tackle misuse of Dark web

① New cyber security policy with a cyber army - offensive attacking on terror target websites.

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(2) Use of emerging technology - AI, Blockchain, quantum computing to assess cryptographic criminal data.

(3) Intelligence gathering by upgrading CCTNS and ~~cri~~ online crime coordination

(4) Strengthening defensive methods for restoring the cyber swachata kendras.

(5) Regulate fake news, rumor mongering

(6) Skill training of National Information centre, CDOT, CDAC

(7) Border systems - Thermal scanners, digital drones, sensors to identify suspicious cyber activities across borders.

Gulshan Rai committee recommendation on upgradation of Indian cyber security ecosystem is need of the hour to regulate Dark web

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**19.** What is catalysis? Highlight the characteristics of catalysts. Also, elaborate why catalytic reactions are important for human beings. **(250 words) 15**
उत्प्रेरण क्या है? उत्प्रेरकों की विशेषताओं पर प्रकाश डालिए। साथ ही, उदाहरण प्रस्तुत करते हुए समझाइए कि मानव के लिए उत्प्रेरकी अभिक्रियाएं क्यों महत्वपूर्ण हैं।

Catalysis is a chemical process which directs a reaction to produce a desired product by assistance through a catalyst.

E.g. Haemoglobin for purification of blood.

Characteristics of catalysts

① Inert in nature - do not directly affect the inputs.

② Themselves remain unutilised in reaction

③ Role of maintaining desired temperature and pressure

④ aim to produce specific result - absence leads to separate reaction.

⑤ often they are non-polluting - no harmful emissions.

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Importance of catalytic reactions for human beings

① Food - chrophyll required by plants in food production.

② Utilisation of atmospheric oxygen in lungs.

③ Digestion - HCl used to break down complex vitamins, minerals, proteins in stomach.

④ Water purification - Palladium used

⑤ Production of energy - Platinum, copper help in breakdown of water to produce hydrogen energy.

⑥ Bone ~~sterno~~ strength - use of ~~sunlight based~~ calcium only possible

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through vitamin-D from sunlight.

(7) Hormones play the role of catalysts in child development and nutrition of fetus.

(8) Drug Delivery and Vaccine Response
- catalysts essential for targeted interventions like blocking histamines or fighting viral infections.

(9) Agriculture - fertilizers for plant growth and higher yield.

Catalysis is an essential part of biospheric sustenance, and research in this field has been awarded the Nobel Prize in 2021.

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**20.** Electric mobility offers solutions to the problems associated with climate change, growing fuel prices, and urban transportation issues. Discuss in the context of India. **(250 words) 15**

इलेक्ट्रिक मोबिलिटी जलवायु परिवर्तन, ईंधन की बढ़ती कीमतों और शहरी परिवहन के मुद्दों से जुड़ी समस्याओं का समाधान प्रदान करती है। भारत के संदर्भ में चर्चा कीजिए।

Electric mobility refers to the technique of automobile functioning through rechargable chemical energy stored in batteries rather than conventional fuels.

Emerging electric mobility in India
- Electric Scooters
- Electric cars
- Railways.
- E-mass Transit Systems

So Problems associated with climate change, growing fuel prices and urban transports

(1) Increasing carbon emissions – rising extreme events of heat islands,

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lung diseases, biodiversity loss.

(2) Higher GHG emissions – disasters.

(3) Poor air quality in non-attainment cities identified in National Air Pollution control Program – especially Delhi NCR region

(4) High taxes on fuels – past oil bonds, lower govt. revenue due to lockdown, energy crisis all over the world, cess on unblended fuel, nascent stage of technology in cleaner energy.

(5) Rising urban population – peri urban areas and satellite cities, higher labour force participation, traffic congestion

**Solutions offered by electric mobility**

(1) Almost zero emissions – relatively clean energy from lithium cell, Sodium, solid metal batteries.

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(2) Rechargable - lower waste and circular economy.

(3) Cheaper and higher energy density.

(4) Electric buses, Electric Metro - Neolite for faster mobility.

(5) Railway modernisation - E Traction by 2030.

(6)

Challenges to electric mobility in India

(1) Li reserves - extremely low, dependance on imports, sodium batteries - no rechargable technology.

(2) Absence of charging infrastructure.

(3) Tropical country - heating deteriorates battery life.

(4) low R&D - Electric vehicles higher pricing
- recession in automobile industry.

Electric mobility is an emerging technology that can help attain Panchamrit goal of Net zero 2070 but requires government support through PLI and PPP.